MATHEMATICS (MATH)

MATH 1030 Mathematics for Educators I 3 Credits
Math 1030 is the first semester in a three-semester sequence of integrated content and methods courses for preservice teachers. It is open only to students in elementary education pursuing certification levels B-11 or 10-14. (The course is not intended for students pursuing certification level 10-21.) Topics covered include problem solving, formal and informal argument, history and development of number systems, sets, fundamental operations with whole numbers and integers, foundational work with functions, and selected topics from statistics.

Components: Class
Prereqs/Coreqs: P: MATH 15 with a grade of "C-" or better or mathematics proficiency level of 15 or above. (Open only to Elementary Education majors)
Typically Offered: Fall/Spring

MATH 12 Mathematical Problem Solving 3 Credits
Mathematical modeling and basic algebra, including fractions and decimals, algebraic expressions and functions, and systems of linear equations and inequalities. Problem solving methods and strategies will be emphasized, as well as success skills such as study skills, time management, and note-taking. (This course does not carry UWP degree credit.)

Components: Class
Typically Offered: Fall/Spring

MATH 15 Intermediate Algebra 3 Credits
Fundamental operations, factoring, fractions, equations, functions, graphing, exponents and radicals, linear equations, systems of equations, inequalities, polynomials, rational expressions, and quadratics. (This course does not carry UWP degree credit.)

Components: Class
Prereqs/Coreqs: P: MATH 10 or MATH 12 with a "C-" or better or mathematics proficiency level of 10 or above
Typically Offered: Fall/Spring/Summer

MATH 1530 College Algebra 3 Credits
Equations and inequalities, functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, complex numbers, systems of equations. This course is equivalent to the first half of Math 2450. Students will not receive credit for both Math 1530 and Math 2450.

Components: Class
Prereqs/Coreqs: P: MATH 15 with a grade of "C-" or better or mathematics proficiency level of 15 or above. (MATH 1530 and MATH 2530 may not be taken concurrently)
Typically Offered: Fall/Spring/Summer

MATH 1630 Finite Mathematics with Applications 3 Credits
Coordinate systems and graphs, matrices, linear systems, linear programming (geometric approach), set theory, counting techniques, probability, Markov chains.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 15 with a C- or better or mathematics proficiency level of 15 or above
Typically Offered: Fall/Spring/Summer

MATH 1730 Mathematics of Finance 3 Credits
Simple and compound interest, annuities, amortization, depreciation, valuation of securities, and bonds.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 10 or MATH 12 or MATH 15 with a C- or better or mathematics proficiency level of 10 or above
Typically Offered: Fall/Spring/Summer

MATH 1830 Elementary Statistics 3 Credits
An introduction to statistical analytical methods including graphing distributions, numerical summaries, linear regression and correlation, the normal distribution, confidence intervals and hypothesis tests for means and proportions, analyzing two-way tables, and analysis of variance. Minitab will be used throughout the course.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 10 or MATH 12 or MATH 15 with a C- or better or mathematics proficiency level of 10 or above
Typically Offered: Fall/Spring/Summer
MATH 1930 Mathematical Explorations 3 Credits
A course to enrich the students' general education by presenting the spirit and some insights of mathematics. The course satisfies the Mathematics Competency requirement, but will not serve as a prerequisite for further math courses. Topics will illustrate the nature of contemporary mathematics and the relationship between mathematics and our cultural heritage. Some of the content and format of the course may vary depending on the instructor's interests. All instructors of the course will include a common unit on mathematical reasoning and problem solving. Other content and format of the course may vary depending on the instructor's interests.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 10 or MATH 12 or MATH 15 with a C- or better or mathematics proficiency level of 10 or above
Typically Offered: Fall/Spring

MATH 2030 Mathematics for Educators II 3 Credits
Math 2030 is the second semester in a three-semester sequence of integrated content and methods courses for preservice teachers. It is open only to students in elementary education pursuing certification levels B-11 or 10-14. (The course is not intended for students pursuing certification level 10-21.) Topics covered include number theory; composition and decomposition of numbers including primes, factors, and multiples; using physical models to develop concepts of and operations on rational numbers; proportional reasoning; and number sense.
Components: Class
GE: Math (Elem/Mdl Educ Only)
Prereqs/Coreqs: P: MATH 1030 with a grade of "C-" or better. (Open only to Elementary Education majors)
Typically Offered: Fall/Spring

MATH 2450 Precalculus 5 Credits
Solving equations and inequalities, functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, trigonometric and inverse trigonometric functions, trigonometric identities and formulas, complex numbers, systems of equations, and conic sections. This course is equivalent to taking both Math 1530 and Math 2530. Students who have credit for Math 1530 or Math 2530 should not take Math 2450.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 15 with a grade of "B-" or better or mathematics proficiency level of 20 or above
Typically Offered: Fall/Spring/Summer

MATH 2530 Trigonometry and Analytic Geometry 3 Credits
Functions and their graphs, trigonometric and inverse trigonometric functions, trigonometric identities and formulas, solution of triangles, complex numbers, exponential and logarithmic functions, and conic sections. This course is equivalent to the second half of Math 2450. Students will not receive credit for both Math 2450 and Math 2530.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 1530 with a grade of "C-" or better or mathematics proficiency level of 30 or above
Typically Offered: Fall/Spring/Summer

MATH 2630 Calculus with Applications 3 Credits
Functions, limits, rates of change, exponential and logarithmic functions, differentiation, integration; with applications in the fields of business and economics.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 1530 or MATH 1630 or MATH 2450 with a grade of "C-" or better, or mathematics proficiency level of 30 or above
Typically Offered: Spring

MATH 2640 Calculus and Analytic Geometry I 4 Credits
Limits and continuity, differentiation, differentials, antiderivatives, the definite integral and applications.
Components: Class
GE: Math competency
Prereqs/Coreqs: P: MATH 2450 or MATH 2530 with a grade of "C-" or better, or mathematics proficiency level of 40
Typically Offered: Fall/Spring/Summer

MATH 2730 Discrete Mathematics 3 Credits
Logic, sets, combinations, relations, graphs, and discrete probability.
Components: Class
Prereqs/Coreqs: P: MATH 2640 with a grade of "C-" or better
Typically Offered: Fall/Spring
MATH 2740 Calculus and Analytic Geometry II 4 Credits
Derivatives and integrals involving exponential, logarithmic, and inverse trigonometric functions, further study of limits, further techniques and applications of integration, sequences and series, polar coordinates, and parametric equations.
Components: Class
Prereqs/Coreqs: P: MATH 2640 with a grade of "C-" or better or advanced placement
Typically Offered: Fall/Spring/Summer

MATH 2840 Calculus and Analytic Geometry III 4 Credits
Analytic geometry of three dimensions, vector analysis, partial differentiation, multiple integrals, and line integrals.
Components: Class
Prereqs/Coreqs: P: MATH 2740 with a grade of "C-" or better or advanced placement
Typically Offered: Fall/Spring/Summer

MATH 3020 Teaching of Mathematics in the Middle and Secondary School 3 Credits
An analysis of the mathematics studied in the middle and secondary schools. Topics include the principles and standards implemented by the NCTM for teaching mathematics and the methods and materials used in educating students in mathematics.
Components: Class
Prereqs/Coreqs: P: MATH 2640 and MATH 2740 with a "B-" or better and junior standing and admission to the School of Education
Typically Offered: Fall

MATH 3030 Mathematics for Educators III 3 Credits
Math 3030 is the third semester in a three-semester sequence of integrated content and methods courses for preservice teachers. It is open only to students in elementary education pursuing certification levels B-11 or 10-14. (The course is not intended for students pursuing certification level 10-21). Topics covered include names, properties, and relationships of two- and three-dimensional shapes; spatial sense; transformations including rotations, reflections, and translations; coordinate geometry; concepts of measurement including measurable attributes, standard and non-standard units, precision and accuracy, use of appropriate tools, the structure of systems of measurement; measurement including length, area, volume, size of angles, weight, mass, and temperature; indirect measurement and its uses, including developing formulas; formal and informal argument.
Components: Class
Prereqs/Coreqs: P: MATH 2030 with a grade of "C-" or better. (Open only to elementary education majors)
Typically Offered: Fall/Spring

MATH 3040 Mathematics Seminar for Middle School Teachers 4 Credits
This course is intended to provide a background for teaching algebra and geometry in the middle school. This course will emphasize problem solving, communication, reasoning, representations, and making connections. Through problem-solving activities lead by either the instructor or students, the course will emphasize specific topics such as proportional reasoning, pattern finding, generalizing functional relationships, solving equations, area, perimeter, and volume. In particular, the course will emphasize the links between algebra and geometry, and when appropriate, will use relevant manipulatives including technology. The course will also emphasize pedagogical implications of current research regarding the teaching and learning of algebra and geometry.
Components: Class
Prereqs/Coreqs: P: MATH 2450 or MATH 2530 or mathematics proficiency level of 40 and MATH 3030 with a grade of "C-" or better.
Typically Offered: Spring

MATH 3130 College Geometry 3 Credits
Topics from Euclidean geometry including classical theorems, transformational geometry, and Euclidean constructions. Non-Euclidean topics include inversion and reciprocation, as well as some ideas from projective geometry. A dynamic geometry software program is used extensively to illustrate ideas in this course.
Components: Class
Prereqs/Coreqs: P: Math 2730 with a "C-" or better
Typically Offered: Spring

MATH 3230 Linear Algebra 3 Credits
Matrices, systems of equations, determinants, eigenvalues, eigenvectors, vector spaces, linear transformations, and diagonalization. This class is intended to introduce students to formal mathematics. Students will be expected to write definitions, theorems, and proofs.
Components: Class
Prereqs/Coreqs: P: MATH 2740 with a grade of "C-" or better
Typically Offered: Fall/Spring/Summer
MATH 3330 Modern Algebra 3 Credits
Study of the structure of abstract algebraic systems through formal proof. Deals primarily with groups, but also examines other algebraic systems including rings and fields.

Components: Class
Prereqs/Coreqs: P: MATH 2730 and MATH 3230 with a grade of "C-" or better in each or consent of instructor.
Typically Offered: Spring

MATH 3630 Differential Equations I 3 Credits
Solutions of first order differential equations, linear homogeneous and nonhomogeneous differential equations, Laplace transforms, linear systems and applications.

Components: Class
Prereqs/Coreqs: P: MATH 2840 with a grade of "C-" or better
Typically Offered: Fall/Spring/Summer

MATH 3730 Numerical Analysis 3 Credits
This course is intended to provide an introduction to numerical methods. Topics will include computer arithmetic, solving nonlinear equations, numerical linear algebra, interpolation and curve fitting, and numerical differentiation and numerical integration.

Components: Class
Prereqs/Coreqs: P: MATH 3230 with a "C-" or better and COMPUTER 1430 with a "C-" or better
Typically Offered: Spring-ODD

MATH 3830 Differential Equations II 3 Credits

Components: Class
Prereqs/Coreqs: P: MATH 3630 with a grade of "C-" or better
Typically Offered: Spring

MATH 4030 Statistical Methods with Applications 3 Credits
Introduction to probability, density and distribution functions, special discrete and continuous distributions, estimation, hypothesis testing, chi-square, correlation and regression.

Components: Class
Prereqs/Coreqs: P: MATH 2740 with a grade of "C-" or better
Typically Offered: Fall/Spring/Summer

MATH 4050 Applied Regression Analysis 3 Credits
A thorough investigation of regression methods used in statistics including linear regression models, multiple regression models, model building, residual analysis, and time series. Students in this course will also learn about the underlying mathematical models for the analyses. Students may not receive credit for both STAT 3130 and MATH 4050.

Components: Class
Prereqs/Coreqs: P: MATH 4030 with a grade of "C-" or better.
Typically Offered: Fall

MATH 4320 History and Development of Mathematical Concepts 3 Credits
A study of the history and development of mathematics from the primitive origins of numbers to modern mathematics.

Components: Class
Prereqs/Coreqs: P: MATH 2740 with a grade of "C-" or better
Typically Offered: Fall-ODD

MATH 4330 Theory of Numbers 3 Credits
Integers, divisibility, prime numbers, Euclidean algorithm, linear Diophantine equations, congruences, Wilson's and Euler's theorems, Fermat's little theorem, and other selected topics.

Components: Class
Prereqs/Coreqs: P: MATH 2730 or MATH 3330 with a grade of "C-" or better
Typically Offered: Fall-EVEN

MATH 4430 Advanced Calculus 3 Credits
Study, through formal proof, of sets, functions, the real numbers, sequences, limits, continuity, differentiation, and integration.

Components: Class
Prereqs/Coreqs: P: Math 2730 with a C- or better or consent of instructor and Math 2840 with a C- or better
Typically Offered: Fall
MATH 4530 Complex Variables 3 Credits
Complex numbers, complex functions, differentiation, elementary functions, integration, and infinite series.
Components: Class
Prereqs/Coreqs: P: MATH 2840 with a grade of "C-" or better
Typically Offered: Spring-EVEN

MATH 4620 Topics in Modern Mathematics 1-3 Credits
Topics to be selected by the instructor.
Components: Class
Prereqs/Coreqs: P: MATH 2840 with a grade of "C-" or better
Typically Offered: DEMAND

MATH 4660 Cooperative Field Experience 1-8 Credits
Enhancement of the educational experience through placement of a student with a cooperating agency, business, industry or institution. The nature of the assignment, type of experience, number of credits, and evaluation procedure to be stipulated in a statement of agreement (learning contract) between the student and department.
Components: Field Studies
Typically Offered: Fall/Spring

MATH 4810 Senior Seminar 1 Credit
Development of library research techniques, organization and presentation of research findings beyond those formed in existing courses.
Components: Seminar
Prereqs/Coreqs: P: 12 credits of mathematics selected from MATH 3100 and above, including either MATH 4430 or MATH 3330 with a grade of "C-" or better.
Typically Offered: Fall/Spring

MATH 4920 Independent Study in Mathematics 1-3 Credits
Components: Independent Study
Typically Offered: Fall/Spring