

MA with an emphasis in Mathematics Teaching (MAmt) Mathematics Application Coursework Form

In order to become certified to teach mathematics at the secondary level (grades 7-12) in the State of Nebraska, you must have completed sufficient hours of collegiate mathematics that satisfies mathematics coursework standards identified in Rule 24 of the Nebraska Department of Education.

The MAmt requires that applicants have completed at least 24 hours of mathematics courses including Calculus and above prior to admission. Please complete this form and identify any courses you have completed that contain the following mathematical knowledge:

- **Calculus (CALC)**
- **Number Theory (NT)**
- **Algebra & Functions (ALG)**
- **Linear Algebra (L-ALG)**
- **Abstract Algebra (A-ALG)**
- **Differential Equations (DIF-EQ)**
- **College Geometry (GEOM)**
- **Probability & Statistics (STAT)**
- **Discrete and Finite Mathematics (DFM)**
- **Mathematical Modeling (M-MOD)**

This will assist MAmt advisors in assessing whether your background, together with coursework that is part of the MAmt, will meet the requirements for certification in the State of Nebraska *and* what courses you may need to take in order to fulfill these requirements. There may be one or two topic areas that have not been covered in your courses. However, this should not prevent you from applying. The information you provide here must correspond exactly to the information in your transcripts. To assist you, you will find a list of UNL courses that fulfill these requirements, with descriptions, on the following pages. If you have taken courses at other institutions please use the following website to determine if the courses might be equivalent: <http://admissions.unl.edu/nebraska/equivalency>

Content Area	Institution	Dept.	Course No.	Course Title	Sem, Year	Cr Hr	Grade
CALC							
NT							
ALG							
L-ALG							
A-ALG							
DIF-EQ							
GEOM							
STAT							
DFM							
M-MOD							

Fill in the space below with any other courses you have taken. Do not duplicate any courses above, but if you have a second or third calculus course you may list that below.

Total

The following is a list of UNL classes that fulfill the requirements above. This can be used as a guide as you fill in the coursework sheet above. To view possible equivalences, please visit: <http://admissions.unl.edu/nebraska/equivalency>

If you are looking to take these courses you can find the schedule of UNL mathematics courses here: http://www.math.unl.edu/resources/class_schedule/ . Note that schedules are not created until the previous semester so you may need to check back frequently.

Content Area	UNL Courses
Calculus (CALC)	<ul style="list-style-type: none"> <li data-bbox="597 525 1421 703">• MATH 106: Calculus I Functions of one variable, limits, differentiation, exponential, trigonometric and inverse trigonometric functions, maximum-minimum, and basic integration theory (Riemann sums) with some applications. <li data-bbox="597 735 1421 877">• MATH 107: Calculus II Integration theory; techniques of integration; applications of definite integrals; series, Taylor series, vectors, cross and dot products, lines and planes, space curves. <li data-bbox="597 909 1421 1123">• MATH 208: Calculus III Vectors and surfaces, parametric equations and motion, functions of several variables, partial differentiation, maximum-minimum, Lagrange multipliers, multiple integration, vector fields, path integrals, Green's Theorem, and applications.
Number Theory (NT)	<ul style="list-style-type: none"> <li data-bbox="597 1197 1421 1375">• MATH 445/845: Number Theory Fundamentals of number theory, including congruences, primality tests, factoring methods. Diophantine equations, quadratic reciprocity, continued fractions, and elliptic curves.
Algebra (ALG)	<ul style="list-style-type: none"> <li data-bbox="597 1407 1421 1549">• MATH 407/807: Mathematics for High School Teachers I Analysis of the connections between college mathematics and high school algebra and precalculus.
Linear/Matrix Algebra (L-ALG)	<ul style="list-style-type: none"> <li data-bbox="597 1554 1421 1732">• MATH 314/814: Linear Algebra Fundamental concepts of linear algebra, including properties of matrix arithmetic, systems of linear equations, vector spaces, inner products, determinants, eigenvalues and eigenvectors, and diagonalization.
Abstract/Modern Algebra (A-ALG)	<ul style="list-style-type: none"> <li data-bbox="597 1736 1421 1902">• MATH 310: Introduction to Modern Algebra Elementary number theory, including induction, the Fundamental Theorem of Arithmetic, and modular arithmetic. Introduction to rings and fields as natural extension of the integers. Particular emphasis on the

	study of polynomials with coefficients in the rational, real, or complex numbers.
Differential Equations (DIF-EQ)	<ul style="list-style-type: none"> • MATH 2221/821: Differential Equations First- and second-order methods for ordinary differential equations including: separable, linear, Laplace transforms, linear systems, and some applications.
College Geometry (GEOM)	<ul style="list-style-type: none"> • MATH 350: Concepts in Geometry Modern elementary geometry, plane transformations and applications, the axiomatic approach, Euclidean constructions. Additional topics vary. • MATH 408 Mathematics for High School Teachers II Analysis of the connections between college mathematics and high school algebra and geometry.
Probability & Statistics (STAT)	<ul style="list-style-type: none"> • MATH/STAT 380: Statistics and Applications Probability calculus; random variables, their probability distributions and expected values; t, F and chi-square sampling distributions; estimation; testing of hypothesis; and regression analysis with applications.
Discrete & Finite Mathematics (DFM)	<ul style="list-style-type: none"> • MATH 405: Discrete and Finite Mathematics Graphs and networks. Map coloring. Finite differences. Pascal's triangle. The Pigeonholed Principle. Markov chains. Linear programming. Game Theory. • MATH 450: Combinatorics Theory of enumeration and/or existence of arrangements of objects: Pigeonhole principle, inclusion-exclusion, recurrence relations, generating functions, systems of distinct representatives, combinatorial designs and other applications. • MATH 452: Graph Theory Theory of directed and undirected graphs. Trees, circuits, subgraphs, matrix representations, coloring problems, and planar graphs. Methods which can be implemented by computer algorithms.
Mathematical Modeling (M-MOD)	<ul style="list-style-type: none"> • MATH 409/809: Mathematics for High School Teachers II: Using Math to Understand Our World This course is designed around a series of projects in which students create mathematical models to examine the mathematics underlying several socially-relevant questions.