

Math in the Middle Courses

Mathematics and Statistics

MATH 800T - *Mathematics as a Second Language*

Introduces an understanding of arithmetic (number), operation and (introductory) algebra as a means of communicating (i.e. as a language) and lays the foundation for developing the habits of mind of a mathematical thinker.

MATH 802T - *Functions, Algebra and Geometry for Middle-Level Teachers*

Deepens teachers' understanding of the concepts of variable and function, problem solving, measurement (especially length, area, volume), and geometric modeling; with emphasis on the connections between these concepts.

MATH 804T - *Experimentation, Conjecture & Reasoning*

Focuses on problem solving, reasoning and proof and communicating mathematics, bringing participants to the next level in the developing mathematical habits of mind.

MATH 805T - *Discrete Mathematics for Teachers*

Designed to deepen knowledge of discrete mathematics as it relates to topics covered in middle through high school curricula through hands-on explorations which emphasize problem-solving strategies.

MATH 806T - *Number Theory & Cryptology for Teachers*

This course focuses on basic number theory results and encryption which are needed to understand the number theoretic RSA cryptography algorithm with emphasis on connections to school mathematics.

MATH 807T - *Using Mathematics to Understand our World*

Uses a series of projects to study the mathematics underlying several socially-relevant questions (i.e. real-world problems, such as how to use mathematics to understand the spread of a disease) and the construction of models to describe them.

MATH 808T - *Concepts of Calculus for Middle Level Teachers*

Develops a fundamental understanding of the key mathematical ideas of calculus in order to broaden teachers' mathematical perspective and gain insight into concepts contained in school curriculum which are related and foundational to the development of calculus.

STAT 811T - *Statistics for Middle Level Teachers*

Introduces probability and statistics following and inquiry/discovery design; emphasizes topics that are part of the middle school curriculum and that are used in education and school-based research.

MATH 896 - *Capstone Course*

In the capstone course, teachers will complete their final project as well as spend time reading, writing, and discussing the following three topics important to their teaching: issues of equity in teaching and learning; assessing students learning; and your life after the program as a teacher leader. Teachers leave this course with an action plan related to their role as a teacher as well as a teacher leader.

ELECTIVE: MATH 804P - *Problem Solving & Critical Thinking for Elementary Teachers*

The course seeks to build a strong foundation for the teaching and communication of mathematical concepts by the hands-on development of critical-thinking skills via problem-solving experiences. It provides a guided opportunity for the implementation of problem-solving instruction that is aligned with the Nebraska mathematics standards in both the primary (K-2) and intermediate (3-5) elementary classroom.

Department of Teaching, Learning and Teacher Education

TEAC 800 – *Inquiry into Teaching and Learning*

This course will introduce you to the assumptions about what counts as knowledge underlying particular approaches to scholarly inquiry and will help you identify the factors, forces and audiences that shape any and all forms of educational research.

TEAC 801 – *Curriculum Inquiry*

The focus of this course will be on helping participants build an understanding of curriculum development, including historical and contemporary that influence curriculum planning and educational change. The course is intended to provide a solid theoretical introduction to curriculum. The primary goal is to help participants develop a broader and deeper understanding of curriculum and curriculum inquiry as it relates to their own teaching practice.

TEAC 808J – *Helping Young Children Become Mathematical Thinkers*

The course focuses on the continued design and implementation of math lessons aimed at helping children become mathematical thinkers. The course emphasizes meeting the needs of diverse learners, including the intentional selection and use of particular teaching strategies coupled with systematic reflection on learning outcomes. It also focuses on the nature of planning and teaching when both are based on an understanding of and willingness to be responsive to children's mathematical understandings. Strategies for increasing the frequency and content of parent communication are included.