

# EDUC: MATHEMATICS EDUCATION (EDMA)

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## **EDMA S608 Mathematical Problem Solving for K-8 Teachers**

3 credits (3+0)

Examines underlying concepts of solving problems using mathematical models, logic, and concepts. Identifies problem solving strategies appropriate to K-8 classrooms. Provides practice developing research and standards based instruction and assessment plans that support an integrated, problem based curriculum.

**Prerequisite:** Current teaching certificate, admission to the Mathematics Education Endorsement program, or permission.

## **EDMA S614 Numeration and Operations: Mathematics for K-8 Teachers**

3 credits (3+0)

Provides K-8 teachers with the content to understand numbers, how they are represented, and the relationships between and among numbers, number systems, and basic operations. Emphasizes standards and research based practices for helping K-8 students construct efficient computational skills. Provides practice developing instruction and assessment plans that integrate number sense, estimation strategies, and efficient computational skills into a problem based curriculum.

**Prerequisite:** Current teaching certificate, or admission to the Mathematics Education Endorsement program, or instructor permission.

## **EDMA S654 Algebra and Functions: Content and Pedagogy for K-8 Teachers**

3 credits (3+0)

Provides K-8 teachers with the underlying principles and concepts of algebra and functions. Emphasizes building algebraic thinking through an examination of patterns, relationships, and functions; with practice developing multiple representations of functions using tables, graphs, and verbal rules. Examines current instructional and assessment practices in mathematics that are research and standard based, and lead to algebraic reasoning for K-8 students.

**Prerequisite:** EDMA S614.

## **EDMA S655 Geometry and Measurement: Content and Pedagogy for K-8 Teachers**

3 credits (3+0)

Provides K-8 teachers with the underlying principles of geometric and spatial sense and the levels of geometric learning, with practice developing a variety of physical models, manipulatives, and software for K-8 classrooms. Examines current instructional and assessment practices that are research and standards based, and lead to visualization and spatial reasoning for K-8 students.

**Prerequisite:** EDMA S614.

## **EDMA S656 Data Analysis, Statistics, and Probability: Content and Pedagogy for K-8 Teachers**

3 credits (3+0)

Provides K-8 teachers with the basic concepts of data analysis, statistics, and probability, with practice using descriptive and inferential statistics to analyze data and make predictions and decisions. Examines current research and standards based instructional and assessment practices in the areas of collecting, displaying, and analyzing data, and experimental and theoretical probability that lead to data analysis, inferential reasoning, and real world applications for K-8 students.

**Prerequisite:** EDMA S614.

## **EDMA S657 Calculus and Trigonometry: Content and Pedagogy for K-8 Teachers**

3 credits (3+0)

Examines the underlying concepts of calculus and trigonometry connected to the mathematical concepts in the typical K-8 math curriculum. Emphasizes current instructional and assessment practices in mathematics that are research and standards based and promote student understanding of the basic concepts on which trigonometry and calculus are founded.

**Prerequisite:** EDMA S614.

## **EDMA S658 Technology for Teaching and Learning Mathematics**

3 credits (3+0)

Teachers gain the knowledge and skills to apply technology to help students understand mathematics content. Applications include visual manipulatives, calculators, spreadsheets, software tutors, web applications, modeling software, and GPS. Emphasizes how technology helps meet local, state, and national standards for mathematics. Provides practice instruction and assessment to integrate technology into a problem-based constructivist mathematics curriculum.

**Prerequisite:** Admission to a graduate program in the Alaska College of Education.

## **EDMA S698 Master's Research Project or Portfolio**

1-3 credits (0+0+4-12)

A research paper, project, or a professional portfolio, jointly approved by the student's graduate committee and the student; to coincide with the student's professional objectives. The portfolio should document the required knowledge and ability to apply the standards set by the UAS School of Education (S). Portfolio criteria should be obtained from the SOE or the graduate advisor. The student's graduate committee may require an oral defense of either option.

**Prerequisite:** Permission of graduate advisor and instructor required.