Foundations of Math for Teachers Learning Outcomes

This is the first of a two-course sequence for future teachers designed to deepen their conceptual understanding of mathematics. Topics will include problem solving, patterns, reasoning and proof, making mathematical connections, sets, understanding algebraic thinking, numeration systems, understanding the four fundamental operations of arithmetic, basic number theory, and the Real Number System.

1. Examine his or her beliefs and attitudes about mathematics supported by current research on brain development and best practices in mathematics.
2. Apply problem solving strategies to a variety of grade level problems.
3. Demonstrate knowledge of different kinds of reasoning that develop during developmental mathematics.
4. Recognize the mathematical structure of patterns.
5. Create and use representations to organize, record, and communicate mathematical ideas.
6. Communicate mathematical thinking coherently and clearly to others while recognizing and using connections among mathematical ideas.
7. Use sets and their operations to explore similarities and differences in mathematics.
8. Demonstrate an understanding of the algebraic thinking developed in mathematics.
9. Demonstrate knowledge of a variety of numeration systems and their origins.
10. Access professional tools such as the National Council of Teachers of Mathematics (NCTM) Standards and the Common Core State Standards for Mathematics.