Textbooks:


Prerequisites: MATH 2030 with a grade of "C-" or better.

Course Description: 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. Throughout the course, students will be expected to explain their reasoning using appropriate vocabulary and notation.

Student Learning Outcomes: Students should be able to:
- identify teaching strategies to help each child learn mathematics;
- gain a conceptual understanding of geometry and measurement; and
- become a reflective practitioner.

Test-out Policy: Math 3030 is an integrated content and methods course for preservice teachers. Much of the content material will be embedded in in-class activities that model a variety of teaching methods. As a result, students will be actively involved in doing mathematics during the class period. Because of the significant amount of in-class participation, a student will not be allowed to test out of this course.

Calculators: A calculator may be required. Calculators with Computer Algebra Systems (CAS), (e.g. the TI-89, TI-92 and TI-Nspire with CAS keypad, or their equivalent), are not allowed in any math classes. On occasion, individual instructors may restrict the use of any type of calculator.

Topics to be covered:

I. Introductory Geometry – In this unit we introduce some of the foundational language and concepts of geometry. Since problem solving is a large component of our three courses, this unit will also incorporate problem solving with the geometry topics.
Students will be expected to explain their reasoning using appropriate vocabulary and notation.

Chapter 11: Introduction to Geometry
11.1 Basic Notations
11.2 Curves, Polygons, and Symmetry
11.3 More About Angles
11.4 Geometry in Three Dimensions

II. Constructions – In this unit we discuss geometric constructions made by using a compass and a straightedge. Students will be expected to justify their constructions using appropriate vocabulary and notation.

Chapter 12: Congruence and Similarity with Constructions
12.1 Congruence Through Constructions
12.2 Additional Congruence Theorems
12.3 Additional Constructions
12.4 Similar Triangles and Other Similar Figures

III. Motion Geometry – In this unit we explore motion geometry. In addition to identifying the various types of motion geometry, students will be asked to physically construct them as well. Students will be expected to explain their work using appropriate vocabulary and notation.

Chapter 13: Congruence and Similarity with Transformations
13.1 Translations and Rotations
13.2 Reflections and Glide Reflections
13.3 Dilations
13.4 Tessellations of the Plane

IV. Measurement – In this unit we develop the concept of measurement. Included throughout will be discussion of the precision and reasonableness of the obtained measure. Students will be expected to explain their measurements using appropriate vocabulary and notation.

Chapter 14: Area, Pythagorean Theorem, and Volume
14.1 Linear Measure
14.2 Areas of Polygons and Circles
14.3 The Pythagorean Theorem, Distance Formula, and Equations of a Circle
14.4 Surface Areas
14.5 Volume, Mass, and Temperature

If you require an accommodation due to a disability, please make an appointment to see me as soon as possible to discuss arrangements for the accommodations. You will need a Verified Individualized Services and Accommodations (VISA) form from Services for Students with Disabilities.