

**Instructor:** Dr. Peggy House office: NSF 1123  
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**Office Hours:** M and W 1:00 - 3:00; F 12:30 – 1:30; other times by appointment.

**Course Description:**

This capstone course for mathematics education students examines the mathematical foundations of fundamental concepts of arithmetic, algebra, geometry, number theory, and other topics from across the mathematics curriculum and the connections that unify those concepts. Emphasis is on thinking deeply about fundamental concepts while further developing students' mathematical reasoning, representation, and problem-solving abilities.

**Prerequisites:** Senior standing and instructor permission.  
(This course fulfills the "mathematics elective" requirement for the mathematics education major.)

**Text and Materials:**

**Text:** Calvin T. Long and Duane W. DeTemple  
*Mathematical Reasoning for Elementary Teachers*. Fourth edition (2006)

**Materials:**

- Compile a "mathematics tool kit" and bring it to class with you (as well as to wherever else you study). Include the following items:
  - Ruler
  - Compass
  - Protractor
  - Colored pencils
  - Scissors
  - Eraser
  - Graph paper
  - Unlined paper
- Make for yourself the following manipulatives using the cutting machine in the mathematics/science resource center. Additional directions will be given in class. Make at least all of the following:
  - Pattern blocks
  - Tangrams
  - Pentominoes
  - Models of regular polygons
  - Other of your choice (look over the available dies in the resource center)
- Be sure you have the following technology readily available:
  - Graphing calculator
  - Geometer's Sketchpad* installed on your laptop
  - Excel spreadsheet on your laptop

**Course Requirements:**

- Attend all classes and participate actively in class discussions and activities.
- Complete assignments on time. Assignments are given on separate sheets.

**Tests and Exams:**

There will be a midterm exam (date to be announced later) and a final. The final exam for this class is scheduled for Tuesday, December 11, 4:00 – 5:50 p.m.

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If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office by: coming into the office at 2001 C. B. Hedgcock; calling 227-1700; or e-mailing [disserv@nmu.edu](mailto:disserv@nmu.edu). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.