MA 250 Algebraic Structures for the Elementary School Teacher

Fall Semester 2006 M-W-R-F 9:00-9:50 WS 3616

Prerequisites: Grade of C or higher in MA 150 and MA 151

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Office Hours: M and W 12:30 - 2:00; R 11:30 – 1:00; F 12:15 – 1:00; other times by appointment

Course Overview: This course examines the mathematical structures underlying algebraic reasoning in elementary-school mathematics. The goal of the course is to examine algebraic reasoning as it develops during the PK-8 grades, with emphasis on conceptual understanding as well as mathematical proficiency.

Required Materials:

- **Text:** We will use four modules from a standards-based middle school mathematics curriculum as a means of gaining insight into the content and instructional approaches of elementary algebra, but we will extend the basic ideas to a greater depth and level of abstraction as we study the mathematics and its conceptual foundations.

  The following books are required. Note that these are from the *Connected Mathematics 2* program (second edition, copyright 2006). Be sure you have this 2006 edition of CM2, not the older version.

  "Thinking with Mathematical Models"
  "Growing, Growing, Growing"
  "Frogs, Fleas, and Painted Cubes"
  "Say It with Symbols"

- **Calculator:** A graphing calculator is required. Have it with you in class at all times.
- **Computer technology:** Be sure you have Excel (spread sheet program) installed on your laptop.
- **Mathematics "tool kit":** The following items will be used frequently. Gather them into a kit that <u>you bring to class with you every day</u>. You will also need these things when you are studying, working on problems, and taking tests. Include the following items in your tool kit:
  - ruler marked in both inches and centimeters
  - scissors (for cutting paper)
  - colored pencils
  - eraser
  - graph paper (Graph paper is readily available wherever you get school supplies.)
  - plain, unlined paper will be needed for some activities

Course Requirements and Expectations:

- Attend every class and <u>participate actively</u> in class discussions and activities. Roll will be taken daily, and absences will negatively impact your grade.
- Complete all assignments on time. Homework assignments will be recorded. Selected assignments or parts of assignments will be graded. Missed or late assignments will not be credited.
- Read and study all of the assigned material. You will be responsible for material covered in assigned readings, even if it is not directly addressed in class. If you do not understand something in the reading, it is your responsibility to ask questions and get clarification. Questions are always welcome in class as well as in the office.
- Working with other students and discussing the ideas with them can be very beneficial. You are required to write your own solutions in your own words when completing assignments, but you are also encouraged to study and discuss ideas with others. Much can be learned from explaining ideas to a peer.
- When writing up homework problems, it is essential that you <u>give complete explanations</u> and <u>explain your thinking</u> (how you got the answer). A "naked answer" (like "12" or "x") <u>will not receive credit</u>. Acceptable responses will be of the form "the answer is _____ **because** . . ." (and then show your work).

Assessment: Assessment of your progress will take place through graded assignments, quizzes, tests, examinations, and class participation.

Quizzes may be given at any time and will usually be unannounced. Missed quizzes cannot be made up. The lowest quiz score will be eliminated from the final grade; all other quizzes will be counted. (Quizzes will likely total between 100 and 150 points.)

Mid-term exam will be given on **Thursday, October 12**. This is the last class before the "conference day weekend." There will be **NO DEVIATIONS** to this schedule. The mid-term exam will be over all of the material covered to date. (Mid-term exam: 100 points.)

Final exam will be given according to the published NMU exam schedule (Tuesday, December 12, 8:00–9:50). It will be a comprehensive exam covering the entire course. (Final exam: 200 points.)

Two other tests will be given, one before the mid-term exam and one between the mid-term and final. Dates and further details will be given in class approximately one week before the respective tests. (These tests: 100 points each.)

Homework assignments will be recorded. Selected assignments or parts of assignments will be graded. Missed or late assignments will not be credited. The lowest homework grade will be eliminated from the final grade; all others will be counted. (Homework will likely total between 100 and 200 points.)

Class attendance and active class participation will be weighed into the final grade. An "active participant" attends class every day, arrives on time, completes all assignments by their deadlines, asks and answers questions in class, and engages in group discussions and problem-solving activities. (A maximum of 100 points can be earned for perfect attendance and active class participation. Points will be deducted for classes missed, for late arrivals, and for lack of participation.)

Grading: Points will be assigned for quizzes, tests and examinations, homework, and class participation. Your grade will be determined by the percentage of the total possible points that you earn, as follows:

A=93-100%; A-=90-92%; B+=88-89%; B=83-87%; B-=80-82%; C+=78-79%; C=73-77%; C-=70-72%; D=60-69%; F=below 60%

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office at 2001 C. B. Hedgcock (227-1700; TTY 227-1543). 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.