

MTH 477

Concepts of Modern Elementary School Mathematics, I

Professor: Dr. Jeffery J. Boats

Office: Engineering 256

Phone: (313) 993 - 3393

FAX: (313) 993 - 1187

Class Sessions: Engineering 200

Tuesdays 6:40pm—9:10pm

Office Hours: MTWTh 11:00am-12:00noon
or by appointment

e-mail: boatsjj @ udmercy.edu

T 5:00pm—6:30pm

WWW: <http://www.contrib.andrew.cmu.edu/~jbbz>

Textbook: Mathematics for Elementary Teachers, updated edition, Musser, Burger, and Peterson, John Wiley & Sons, New York.

Topics: Problem solving and reasoning; pattern identification; problem solving and communication of ideas including:

- ∞ Sets, functions, numeration
- ∞ Fundamental operations of arithmetic
- ∞ Number theory
- ∞ Integers, rational numbers, decimal numbers, real numbers
- ∞ Proportional reasoning

MTH 101 is considered a pre-requisite of this course (see the Undergraduate Catalog), and in the past, a passing score on the **Michigan Basic Skills Test (MBST)** was also considered a pre-requisite. *I will not strictly enforce either, but I strongly caution students not meeting these requirements that they might find the course material above their mastery level at this juncture in their academic careers. You have been warned.*

Course Objectives: At the completion of this course, the student will:

- ∞ use a problem solving approach to investigate and understand mathematical content
- ∞ understand and apply concepts of number, number systems, and number theory
- ∞ understand algorithms and perform basic operations with whole numbers, integers, rational numbers, and real numbers
- ∞ formulate and solve problems from mathematical and everyday situations
- ∞ communicate mathematical ideas orally and in writing using everyday and mathematical language

- ∞ use computers and calculators in computations and problem solving situations
- ∞ understand and apply numerical computation and estimation techniques
- ∞ show an understanding of the interrelationships within mathematics

Technology:

Calculators may be used for homework and during certain portions of the tests and Final. Sometimes tests will be broken into two portions: a no-calculator portion which you do first and turn in, followed by a second portion.

Attendance / Class Cancellation Policies:

Attendance will be recorded as a formal part of the course. A student is permitted two unexcused absences without penalty, but each unexcused absence after that will result in a 5% *REDUCTION* in their final course grade. An “excused absence” is one where a medical document is provided to explain an illness, or when the professor is told at least 24 hours in advance and agrees the excuse is acceptable.

If a class is cancelled due to inclement weather resulting in school closing, or due to instructor absence, then anything planned for that class, including tests and assignment due dates, will be moved to the next class session.

Academic Integrity:

Students are expected to conform to a high standard of honesty and integrity. Please refer to the University Catalog and Student Handbook for further explanation.

Grading Scale: The standard 90-80-70-60 grading scale will be used, though the instructor reserves the right to curve test scores up or to lower grading standards.

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|-------|----|-------|----|-------|----|-------|----|
| 93+ | A | 89-87 | B+ | 79-77 | C+ | 69-67 | D+ |
| 92-90 | A- | 86-83 | B | 76-73 | C | 66-60 | D |
| | | 82-80 | B- | 72-70 | C- | 59- | F |

Homework and Presentations:

Homework will be assigned in nearly every class, but most of it is not for a grade, but rather as means of practicing problem-solving and teaching skills. There will however be certain homework problems, designated in class, which will be collected at the start of the next class and graded. Graded homework will constitute 15% of the final course grade.

Each member of the class will also be part of a formal cooperative learning group. In classes where homework is collected for a grade, this will immediately be followed by in-class presentations of homework solutions. For these presentations, a member of each group will be selected randomly to present a randomly-selected problem from the assignment before the class – he/she will be graded on their presentation, *and their entire group will share that grade for the day*. Presentations will constitute 15% of the final course grade.

Tests / The Final:

There will be three tests during the semester – two normal tests and a Basic Arithmetic Test.

The normal tests, named Test #1 and Test #2, will be held in the second half of class on October 12th and November 9th respectively. They will cover both problem-solving and teaching techniques for whatever elementary mathematics topics have been covered to that point. Students missing the test for unexcused absences will not be permitted to take the test at a later date. Each of these tests counts as 15% of the final course grade.

The Basic Arithmetic Test, or “Gateway” test will be given for the first time in the second half of class on September 21st. This is a 15-question test in Basic Skills which counts for 20% of the final course grade, and as mastery of these skills is essential for good teaching, *this test can only be passed with a score of 80% or better, and there will be no partial credit given.*

Students scoring 80% or better on the Basic Arithmetic Test will receive that grade; those failing (i.e. less than 80%) will receive a *ZERO* for their grade. They will, however, be permitted to retake the test – it will be offered every other week, after normal class time, until the end of the semester. A passing grade at any taking of the test will replace the zero.

The Final Exam is scheduled for Tuesday, Dec. 14th, from 7:30pm to 9:20pm, in the usual classroom. It is worth 20%, it will be cumulative, and like Test #1 and Test #2 it will cover both problem-solving and teaching techniques. Should there still be students who have not yet passed the Basic Arithmetic Test, they will have their last chance immediately after the Final.