

Math 184.03
FOUNDATIONS OF MATHEMATICS
FOR ELEMENTARY TEACHERS (I)
3 credit hours, Spring 2008

INSTRUCTOR: Dr. Mark Klespis

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Office Hours: MWF: 10:30 - 11:30 AM

TTh: 9:00 - 9:30 AM; 2:00 - 3:00 PM
& by appointment

CLASSROOM AND SCHEDULE: **Section 3:** Tuesday and Thursday, 9:30 - 10:50, LDB 431

COURSE DESCRIPTION:

This course is the first in a series of courses designed to develop the necessary foundations in mathematics for prospective elementary teachers. Students are expected to practice communications skills and participate in hands-on activities, including the use of math manipulatives and technology. Topics will include National and Texas standards for teaching mathematics, sets, numeration systems, natural numbers, integers, number theory and rational numbers. Throughout the course, the four main themes recommended by the NCTM Principles and Standards (problem solving, reasoning, communication and connections) will be emphasized. Students will also participate in class discussions and group work during this course. Prerequisite: TASP score of 250 or Math 032D with a passing grade. 3 semester hours.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Analyze the structure of numeration systems and the roles of place value and zero in the base ten system
- Understand the relative magnitude of whole numbers, integers, rational numbers, and real numbers
- Demonstrate an understanding of a variety of models for representing numbers
- Demonstrate an understanding of equivalency among different representations of rational numbers
- Select appropriate representations of real numbers for particular situations
- Understand the characteristics and properties of the set of whole numbers, integers, rational numbers, and real numbers
- Demonstrate an understanding of how some situations that have no solution in one number system (e.g., whole numbers) have solutions in other number systems (e.g., real numbers)
- Work proficiently with real numbers and their operations
- Analyze and describe relationships between number properties, operations, and algorithms for the four basic operations involving integers, rational numbers, and real numbers
- Use a variety of concrete and visual representations to demonstrate the connections between operations and algorithms
- Justify procedures used in algorithms for the four basic operations with integers, rational numbers, and real numbers, and analyze error patterns that may occur in their application
- Relate operations and algorithms involving numbers to algebraic procedures
- Extends and generalizes the operations on rationals and integers to include exponents, their properties, and their applications to the real numbers

- Demonstrates an understanding of ideas from number theory (such as prime factorization, greatest common divisor) as they apply to whole numbers, integers, and rational numbers, and use these ideas in problem situations
- Apply properties of the real numbers to solve a variety of theoretical and applied problems

TEXT AND MATERIALS:

Long, C. T. & DeTemple, D. W. (2006). *Mathematical Reasoning for Elementary Teachers*. (4th ed.). Pearson Learning.

Supplemental materials provided by the instructor

A scientific or graphing calculator is required for this course. TI-34II or TI-84+ recommended.

GRADING:

Each student's grade for this course will be based on a percentage of the number of points earned out of total points assigned (usually around 700 points):

Grades will be assigned for the following areas:

- Three exams, weighted 100 points each
- Homework/in class assignments - 150 to 200 points
- 1 or 2 Projects - 50 points each
- Comprehensive final exam - 200 points

A letter grade will be given based on the following scheme

A: 90 to 100% of total points B: 80 to 89% of total points C: 70 to 79% of total points

D: 60 to 69% of total points F: less than 60% of total points.

The only other way to earn points in Mth184 is through class participation. If you present a solution to a problem, or answer a question (or ask a particularly insightful question), you will be given a "participation" card. Each card is worth $\frac{1}{2}$ of a point on your final exam. You will turn in these cards at the end of the semester.

NOTE: I do NOT give "extra credit" assignments. Your grade is based solely on the grading scheme above. There is no way for you to do extra work to bring up your grade.

ATTENDANCE/PROFESSIONALISM:

Regular and punctual attendance is expected of every student. As a prospective teacher, you must demonstrate your reliability and conscientious attitude by your faithful attendance. Students who miss more than two classes (three hours) during the semester may be assessed a point penalty (up to 50 points for severe attendance problems) toward their course grade.

Attendance will be taken every class. If absent or tardy, you are still responsible for all material covered in class, and you will need to check with a classmate about what was discussed. Serious health or family problems that are well documented will be handled individually. However, if you are unable to attend class regularly, then you should drop the course.

In addition to attending class faithfully, students are expected to put forth their best effort in this class. If you do not participate in class discussions, are sleeping in class, or are talking when I am talking or when a classmate is talking, you are not demonstrating the professional attitude required to be a teacher. Not only are you missing instruction when talking, but you are also preventing the learning of those students sitting near you.

TESTS AND ASSIGNMENTS:

Tests will include problems that are similar to problems assigned and worked in class. A portion of each test may include multiple choice or short answer problems. A second portion of each test will include problems where students must show all of their work correctly, as well as arrive at the correct solution to the problem.

There will be no make-up for a missed test. The first test a student misses, the grade will be replaced by the percent grade on the final exam. If a student misses any additional tests, a grade of 0 will be assigned. Late assignments do not exist. Zero points will be recorded for any assignment not turned in on or before the class date when it is due (even if you are absent that day).

No early finals are given. A missed final examination can be made up only by approval of the Dean of the College of Arts and Sciences or a higher administrative official.

THE FINE PRINT:**ACADEMIC DISHONESTY**

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

COMPLIANCE WITH THE 1990 AMERICANS WITH DISABILITIES ACT

Sam Houston State University does not discriminate on the basis of disability in admission to, access to, or operations of its programs, services, or activities. I would like to help students with disabilities to achieve their highest potential. In order to receive accommodations on exams and/or assignments, students must alert me to their situation as soon as possible and also must go to the Counseling Center and Services for Students with Disabilities (SSD) on campus for proper documentation of their needs. All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until you register with the Counseling Center.

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS POLICY

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). This request must be made in the first fifteen days of the semester or the first seven days of a summer session in which the absence(s) will occur. The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.