

# **COURSE SYLLABUS: Math 184 Section 05, 3 credit hours, Spring 2008**

## **FOUNDATIONS OF MATHEMATICS FOR ELEMENTARY TEACHERS (I)**

**CLASSROOM AND SCHEDULE:** Tuesday/ Thursday, 11:00 am – 12:30 pm, Room 431 LDB

### **INSTRUCTOR:**

Dr. Beth Cory

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Office Hours: Monday/Wednesday 9:45 am – 10:45 am, 1:00 pm – 2:00 pm

Tuesday/Thursday 1:30 – 2:30 pm

Appointments by special arrangement

### **COURSE OBJECTIVES/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 five main themes recommended by the NCTM Principles and Standards (problem solving, reasoning, communication, connections, and representation) will be emphasized. Students will also participate in class discussions and group work during this course. Prerequisite: TASP score of 240 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
- 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

### **REQUIRED TEXT AND MATERIALS:**

Long, Calvin and DeTemple, Duane W. (2006). *Mathematical Reasoning for Elementary Teachers* (Fourth Edition). Boston, MA: Pearson Education, Inc.

Supplemental materials provided by the instructor.

**MATERIAL TO BE COVERED:**

Chapter 2	Sets and Whole Numbers	All sections: 2.1 – 2.4
Chapter 3	Numeration and Computation	Sections 3.1 – 3.4
Chapter 4	Number Theory	Sections 4.1 – 4.3
Chapter 5	Integers	Sections 5.1 – 5.3
Chapter 6	Fractions and Rational Numbers	All sections: 6.1 – 6.3

**SUPPLIES:** To be prepared for action during each class, you will need to have:

- Colored pencils, pens, markers, crayons
- A scientific or graphing calculator

**ATTENDANCE:** 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. Attendance will be taken every class. Any student who is more than 30 minutes late to class will be counted absent. Tardies will count against your attendance record (3 tardies -1 absence). Unless approved by the instructor, leaving class early will count as an absence. 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. **If you have 3 or fewer absences, your final exam grade can be substituted for your lowest unit test grade in figuring your final course grade.** **Note:** Some homework grades will come from in-class work--if you are absent, you lose that opportunity. Severe attendance problems may result in a letter grade drop at the discretion of the instructor.

In addition to attending class faithfully, students are expected to put forth their best effort in this class. If you do not participate appropriately in class discussions and activities, are sleeping in class, are doing other homework, are talking when I am talking or when a classmate is talking, etcetera (see the section Classroom Rules of Conduct below), 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. **For each class period during which you exhibit a lack of participation or a lack of professionalism, you will be counted as absent for the day.** Severe problems in the area of professionalism may result in a letter grade drop at the discretion of the instructor.

**COURSE EVALUATION:** Each student's grade will be based on:

3 Unit Tests (each 100 points)	300
Homework/In-Class Activity Checks (each 10 points – best 10 of 12)	100
Final Exam (Comprehensive)	<u>150</u>
<b>Total Points</b>	<b>550</b>

**HOMEWORK/IN-CLASS ACTIVITY CHECKS:** One of the indicators of the understanding of a concept is the ability "to state it in your own words". Communicating your understanding will be shown through your complete solutions to assigned homework problems and through written responses/reflections to readings, questions, situations, activities or other topics related to your study of mathematics. These responses will be collected **at least 12** times over the course of the semester and be **worth 10 points** each. Your **best 10 of 12**

will be counted toward your final point total. Folder checks will include in-class work as well as out-of-class assignments. Because you will drop your lowest 2 scores, **NO LATE WORK WILL BE ACCEPTED.**

**TESTS:** Tests will include problems that are similar to problems assigned and worked in class. A portion of each test will 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, or provide complete explanations for the problem or situation posed.

**Tentative Test Dates:**

Check with instructor or look for announcements on blackboard to be sure dates have not changed.

February 14, March 25, April 29

**NO MAKE-UP TESTS WILL BE GIVEN** unless the student has an Official University excused absence. Arrangements must be made in advance of the exam. If you miss a test without an official excuse, your final exam grade will count double.

**Final Exam Date: Thursday, May 15, 11:00 am – 1:00 pm**

**GRADING SCALE:**

A	495 - 550
B	440 - 494
C	385 - 439
D	330 - 384
F	below 330

**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.

**CLASSROOM RULES OF CONDUCT:**

Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. **Cellular telephones and pagers must be turned off before class begins.** Students are prohibited from making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

**FOOD AND DRINK POLICY:**

Food, tobacco products, and drinks (other than water) are not allowed in the classroom.

**VISITORS IN THE CLASSROOM:**

Unannounced visitors to class must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom.

**AMERICANS WITH DISABILITIES ACT:**

It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic or Student Life program or activity. SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center [(936) 294-1720] and to talk with me about how I can best help you. 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). The instructor will provide the student with a written description of the deadline for the completion of missed assignments.