

**COURSE SYLLABUS**  
**Math 184, Section 06**  
**FOUNDATIONS OF MATHEMATICS FOR ELEMENTARY TEACHERS (I)**  
**CREDIT HOURS: 3**  
**Fall 2007**

**Classroom and Schedule:** Lee Drain Building, Room 431,  
Tuesdays and Thursdays, 2:00-3:20 p.m.

**Instructor information:**

Dr. Dustin L. Jones

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Office hours: 1:00-2:00 p.m. Monday through Thursday

Many other times available by appointment, email, or simply dropping by

**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 communication skills and participate in hands-on activities, including the use of mathematics manipulatives and technology. Topics will include National and Texas standards for teaching mathematics, sets, numeration systems, operations with whole numbers, integers, and rational numbers, and number theory. Throughout the course, the five main themes recommended by the National Council of Teachers of Mathematics' *Principles and Standards for School Mathematics* (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
- 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
- Extend and generalize the operations on rational numbers and integers to include exponents, their properties, and their applications to the real numbers
- Demonstrate an understanding of ideas from number theory (e.g., 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 Textbook:**

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

Up-to-date course information will be posted on Blackboard. **Please check Blackboard regularly.**

**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 ready for action during each class, you will need to have:

- a scientific or graphing calculator
- colored pencils, pens, or crayons

**ATTENDANCE POLICY:** 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. Any student who is more than 30 minutes late to class will be counted absent. Tardies will count against your attendance record, at the rate of 3 tardies equaling one 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. Serious health or family problems that are well documented will be handled individually.

In addition to attending class faithfully, students are expected to put forth their best effort in this class. This includes, but is not limited to, actively participating in class discussions and activities. By way of contrast, unprofessional behaviors (such as sleeping, texting, laying your head on the desk, reading the newspaper, or studying for other classes) will not be tolerated.

A total of 20 points are designated for attendance, participation, and professional behavior. I will allow you two absences without penalty. Each absence after that will decrease your attendance score by ten points. Displaying unprofessional behaviors will also lower your attendance score.

**ASSIGNMENTS:** 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. I will collect *at least* ten assignments over the course of the semester; each is **worth 10 points** each. I will count only your best eight assignment grades toward your final score. Assignments include, but are not limited to: answering homework questions from the textbook or worksheet, writing short papers, or completing online assignments. Because the lowest scores are dropped, **NO LATE WORK WILL BE ACCEPTED.** If you know that you will be absent, you may turn in your assignment early, drop it by my office or send it by email by class time of the due date.

**TESTS:** There will be three unit tests during this semester, as well as a comprehensive final exam. These tests will contain problems similar to those worked in class and contained in homework assignments. Test items will be in a variety of formats, such as multiple choice, short answer, or more extended items that require explanations.

**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 a student misses a test without an official excuse, the score on the final exam will be given for the first test missed. A score of zero will be given for all subsequent missed exams.

**Tentative test dates:** September 13, October 18, November 29

**Final Exam:** Thursday, December 13, 2:00-4:00 p.m.

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

Three unit tests (100 points possible for each)	300 points
Assignments (10 points possible for each, best 8 scores)	80 points
Attendance, participation, and professionalism	20 points
Comprehensive final exam	100 points
<b>Total possible</b>	<b>500 points</b>

**Grading Scale**

Points earned	450-500	400-449	350-399	300-349	less than 300
Course grade	A	B	C	D	F

**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 eating in class, using tobacco products, making offensive remarks, reading newspapers and magazines, 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.

**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. This policy is not intended to discourage the occasional visiting of classes by responsible persons. Obviously, however, the visiting of a particular class should be occasional and not regular, and it should in no way constitute interference with registered members of the class or the educational process.

**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. Disabled students may request assistance with academically related problems stemming from individual disabilities by contacting the Director of the Counseling Center in the Lee Drain Annex or by calling (936) 294-1720.

**STUDENT ABSENCES ON RELIGIOUS HOLY DAYS:** University policy states that a student who is absent from class for the observance of a religious holy day must be allowed to take the examination or complete an assignment scheduled for that day within a reasonable time after the absence. Students will be excused to travel for observance of a religious holy day. A student who wishes to be excused for a religious holy day must present the instructor with a written statement describing the holy day(s) and the travel involved. The instructor will then provide the student with a written description of the deadline for the completion of missed exams or assignments.

## TENTATIVE SCHEDULE

<i>Day</i>	<i>Date</i>	<i>Sec.</i>	<i>Topics</i>	<i>Suggested Exercises &amp; Problems</i>
1	8/21		NCTM Standards	Read inside back cover of textbook
2	8/23	2.1	Sets	p. 83: 1, 2, 11, 15, 16, 29, 30
3	8/28	2.2	Counting and whole numbers	p. 97: 1, 2, 11, 13
4	8/30	2.3	Whole number addition	p. 111: 1, 4, 5, 8abcd, 9, 10
5	9/4	2.3	Whole number subtraction	p. 111: 12, 14acd, 15abc, 20, 28
6	9/6	2.4	Whole number multiplication	p. 130: 1, 2, 3, 5, 7, 9
7	9/11	2.4	Whole number division	p. 130: 15, 16, 17, 18, 24, 29, 38
8	9/13	<b>Test 1</b>		Ancient Number System Research
9	9/18	3.1	Ancient number systems	p. 154: 1, 2, 3, 4, 5
10	9/20	3.1	Ancient number systems	Work on Number System Wiki
11	9/25	<b>No class meeting - Number System Wiki due by 8 p.m.</b>		
12	9/27	3.2	Nondecimal number systems	p. 161: 1–10, 22
13	10/2	3.2	Nondecimal number systems	
14	10/4	3.3	Written algorithms for +	p. 177: 1, 2, 3, 12, 13
15	10/9	3.3	Written algorithms for –	p. 177: 5, 6, 7, 17, 20
16	10/11	3.4	Written algorithms for ×	p. 188: 2, 3, 4, 8, 17
17	10/16	3.4	Written algorithms for ÷	p. 188: 6, 7, 10, 19, 20
18	10/18	<b>Test 2</b>		
19	10/23	4.1	Prime & composite numbers	p. 242: 2, 5, 7, 9, 15, 17, 19
20	10/25	4.1	Factors & multiples	
21	10/30	4.2	Divisibility tests	p. 252: 1, 2, 6, 8, 12, 13
22	11/1	4.3	GCF & LCM	p. 264: 1, 2, 3, 4, 12, 13, 14
23	11/6	6.1	Rational numbers and fractions	p. 354: 1, 2, 3, 4abc, 5, 6, 9, 10, 12
24	11/8	6.1	Representations of fractions	p. 354: 16, 19abce, 20, 22, 24, 33
25	11/13	6.2	Fraction addition	p. 375: 1, 2, 3, 4, 6abcdeh
26	11/15	6.2	Fraction subtraction (fun to say!)	p. 375: 7abc, 8abc, 9, 10, 12abcdef
27	11/20	6.2	Fraction multiplication	p. 377: 13, 14, 15, 18, 27
28	11/27	6.2	Fraction division	p. 377: 16, 17, 18, 21, 29, 37, 39, 42
29	11/29	<b>Test 3</b>		
30	12/4	5.1	Representing integers	p. 291: 1, 3, 9, 14, 26
		5.2	Integer addition and subtraction	p. 310: 1, 3, 4, 6, 11, 12, 24
31	12/6	5.3	Integer multiplication and division	p. 320: 1, 2, 3, 4, 6, 10, 11
32	12/13	<b>Final Exam – Thursday, 2:00-4:00</b>		

This is a tentative schedule and is subject to change. You will be advised of changes in class and on Blackboard. If you know that you will miss a class time when an assignment is due, please turn it in early and you will not be given a zero. If you know that you will miss a test, see me in advance. I look forward to a great semester!