



Foundations of Mathematics for Elementary Teachers (I)

Course Syllabus

Math 1384-03 Fall 2017

Room: Lee Drain Building, room 431

Class Time: Monday/Wednesday 12:30 – 1:50 pm

Instructor: Julie Albert

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Office Hours: Monday/Tuesday/Wednesday/Thursday 9:30 – 11:00 am

Other appointments by special arrangement

Course Description: This course is the first in a series of 3 courses designed to develop the necessary foundations in mathematics for prospective elementary teachers. Topics will include National and Texas standards for teaching mathematics, sets, systems of numeration, 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 are expected to practice communications skills and participate in hands-on activities, including the use of math manipulatives and technology. Students will also participate in class discussions and group work during this course.

Prerequisite: TSI score of 350 or Math 0332 with a C or better. **Credits:** 3 semester hours.

Course Objectives:

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

- Analyze the structure of numerations 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 number, 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.
- Work proficiently with decimals and their operations.
- Use a variety of concrete and visual representations to demonstrate connections between decimal operations and algorithms.
- 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 real numbers.
- Demonstrate 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 real numbers to solve a variety of theoretical and applied problems.

Required Text and Materials: (new for Fall 2017)

Reconceptualizing Mathematics for Elementary School Teachers. (Third Edition). Sowder, J., Sowder, L. and Nickerson, S. (2017). New York, NY: W.H. Freeman and Company.

This textbook is intended to be a consumable resource. Students are encouraged to write in their text (space is provided in the margins) and to keep notes/work for use in future methods courses, as well as classroom teaching. The pages of the text are perforated and may be easily removed. Supplemental materials will be provided by the instructor.

Course Evaluation: Each student's grade will be based on:

3 Unit Tests (each 100 points)	300
Arithmetic Test	50
Homework	50
Online Quizzes (each 10 points – best 5 of 7)	50
Final Exam (Comprehensive)	<u>125</u>
Total Points	575

Grading Scale:

A	517 - 575
B	460 - 516
C	402 - 459
D	345 - 401
F	below 345

Arithmetic Test: A ten-question test will be administered in class during the second week of class. This test will cover addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals. Calculators are NOT allowed on the arithmetic test.

Scoring: The table below shows how the Arithmetic Test will be scored.

Number correct	10	9	8	7	6	5	4	3	2	1	0
Score	50	25	13	7	6	5	4	3	2	1	0

Re-takes: Students with a score below 50 must contact the instructor to schedule a time outside of class for a re-take. Students may re-take the test up to three times before September 27, 2017. After September 27, the score on the arithmetic test is final.

Homework: Homework assignments and in class quizzes will be assigned over the course of the semester in order to allow students to communicate understanding of material. Student's lowest two scores will be dropped.
***No late work will be accepted.**

Online Quizzes: Seven online quizzes will be posted on Blackboard throughout the semester for your completion. Each quiz will have between 5 and 10 questions and will be worth a total of 10 points. Your **best 5 of 7** quiz scores will be counted toward your final point total.

Class Participation and 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.** If you have 3 or fewer absences, your final exam percentage 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.

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, behave in a disrespectful manner, sleep in class, do other homework, have your cell phone turned on, talk 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 during which you exhibit a lack of participation or a lack of professionalism, you will be counted absent for the day. In some instances, you may be asked to leave class for the day.**

Tests: Tests will include multiple choice, short answer, and a variety of questions in which students must show all work and/or give explanations for answers.

Tentative Test Dates: October 4, October 25, and November 20

If a student is unable to take a test due to an official university excused absence, he/she will need to contact Mrs. Albert as soon as possible to schedule a make-up. If a student misses a test with an official university excuse and a makeup test is not possible, his/her final exam percentage grade will be used as a replacement.

Final Exam Date: Check official SHSU Final Exam schedule for dates of exam

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, 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.

Use of Telephones and Text Messagers in Academic Classrooms and Facilities: The use by students of electronic devices that perform the function of a telephone or text messenger during class-time may be prohibited if deemed disruptive by the instructor to the conduct of the class. Arrangements for handling potential emergency situations may be granted at the discretion of the instructor. Failure to comply with the instructor's policy could result in expulsion from the classroom or with multiple offenses, failure of the course. Any use of a telephone or text messenger or any device that performs these functions during a test period is prohibited. These devices should not be present during a test or should be stored securely in such a way that they cannot be seen or used by the student. Even the visible presence of such a device during the test period will result in a zero for that test. Use of these devices during a test is considered de facto evidence of cheating and could result in a charge of academic dishonesty (see student code of conduct <http://www.shsu.edu/students/guide/StudentGuidelines2010-2012.pdf#page=29>).

Students with Disability Policy:

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should register with the Office of Services for Students with Disabilities located in the Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786, and e-mail disability@shsu.edu). They should then make arrangements with their individual instructors so that appropriate

strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

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 Services for Students with Disabilities 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 Services for Students with Disabilities. For a complete listing of the university policy, see:

<http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf>

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.

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 and/or tests.