Introduction to Mathematics for Elementary Teachers

Course Description
Properties of the natural numbers, integers, rational, and real number systems, and number theory, with an emphasis on problem solving and critical thinking.
http://www2.sfasu.edu/math/courses/syllabi/MTH127Syllabus.pdf

Course Prerequisites: Two years of high school algebra and one year of high school geometry.

Course Time and Meeting Place: Online at https://d2l.sfasu.edu

Instructor
- Lorna De Sha
- Email: deshald@sfasu.edu (Expect response to email within 24 hours on weekdays and 48 hours on the weekends.)
- Office: Math 347, phone: (936) 468-1440, Office Hours: by appointment

Current Text and Materials
The textbook for this course is Mathematics for Elementary Teachers, Beckmann 0321901231 Pearson 5th

- The electronic version (eBook) is recommended. If you have previously purchased MyMathLab access for use with this textbook, consult your instructor or the Pearson Company before making any additional purchases.

Online Tutoring: Virtual (online) tutoring is available through ZOOM on Monday through Thursday, 1 to 2:45 pm.
You can access ZOOM with the following link: https://sfasu.zoom.us/j/126774064
Or you can download the free ZOOM app on your phones. You will need the cod: 126-774-064

Course Goals
- To understand the mathematics essential to successful teaching in the elementary school classroom.
- To acquire a foundation in numeration systems, number theory and properties of the natural numbers, integers, rational, and the real number system.
- To gain skill in problem solving and critical thinking.

Student Learning Outcomes (SLO):
At the end of MTH 127, a student who has studied and learned the material should be able to:
1. Solve a variety of problems using multiple problem-solving techniques. [CO 1,3]
2. Demonstrate understanding of core concepts underlying standard and non-standard algorithmic procedures for performing operations on subsets of real numbers. [CO 1,3]
3. Communicate his/her knowledge effectively in multiple formats – verbally, concretely, and in writing. [CO 2]
4. Define, identify, and use the fundamental properties of real number operations. [CO 3]
5. Provide logical justification of mathematical thinking. [CO 1]
6. Use mathematical language and notation appropriately to communicate ideas. [CO 2]

Program Learning Outcomes
This is a general education core curriculum course and no specific program learning outcomes for this major are addressed in this course.
Calculators
Calculators will not be used in this course. The mathematics we cover is at the elementary level, and most of our time will be spent on understanding and explaining content deeply. Teacher candidates should be fluent in all required computations. Ask for help if you need it and be prepared to spend additional time outside of class practicing computations until you become comfortable doing them without a calculator.

Course Requirements:
- A midterm exam and final exam each lasting 2 hours, dates listed below
- D2L access. You will be required to access SFA’s Learning management Software(at [https://d2l.sfasu.edu](https://d2l.sfasu.edu)) daily
- Homework from the textbook will be uploaded and graded. Read the homework grading police as found on D2L carefully.
- Attendance and participation are expected. This course is taught with an emphasis on inquiry rather than lecture. Learning within this framework requires active participation
- Reading the textbook is essential to the learning process and is expected. You should read the section to be covered carefully before attempting investigations, discussions, or homework problems. It will likely be necessary to read each section more than once.
- Additional assignments at the instructor’s discretion
- There is NO extra credit
- Initiative to seek help outside of class, in the professor’s office, through Supplemental Instruction, or the AARC may be necessary in order to succeed in the course

Grading and Exams
There will be two 120 minute exams during the semester and a 2 hr. comprehensive final exam. For each exam, you may choose to either take it on SFA campus on the date and time specified in the Course Timeline or you may choose to take it with a proctor (that you have made arrangements with) on the exam day(s) listed below. Your course grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Date</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>Written homework problems submitted online, discussion posts, d2L quizzes,</td>
<td>25%</td>
</tr>
<tr>
<td>Writing</td>
<td>TEKS writing assignments, prompts and link on D2L</td>
<td>5%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>July 25-26, on-campus proctoring July 26, 3-7pm in Kennedy Auditorium</td>
<td>35%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>August 15-16, on-campus proctoring August 16, 3-7pm in Kennedy Auditorium</td>
<td>35%</td>
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Semester numerical scores will be converted into letter grades according to the following method.

<table>
<thead>
<tr>
<th>Range of numerical values</th>
<th>Corresponding Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>

When we calculate your final grade at the end of the course, we will calculate a score on a 0-100 point scale using the scores that you have obtained during the course, and the grade breakdown given above. Your course grade will then be obtained using this table.

Due to the pace of a summer course, we will have only two exams and there is NO resurrection policy.
Exam Policy

Exams in this course must be proctored. You may take exams at the SFA campus with Mrs. Prince (during the time and on the day specified in the Course Timeline in the Getting Started module) or you may elect to take exams with an approved proctor at another location during the specified time period listed in the Course Timeline in the Getting Started module. If you choose to take exams at another location, it is YOUR responsibility to secure a proctor and submit contact information to the instructor. Please see the “Exam Proctoring Instructions” document provided on D2L for more information.

Exams must be taken within the range of dates listed above. Exams may be taken at other locations (other than SFA) anytime during the given date range. There should be no reason to miss an exam other than:

1. A medical excuse. Please provide proper documentation according to university policy.
2. A University sponsored event such as an athletic tournament, a play, or a musical performance. Your coach or director must contact us in advance. Athletic practices and rehearsals do not fall into this category.
3. A religious holiday. Please send a short email explaining the situation.
4. Extreme hardship such as a family emergency. Please have the proper university office notify us.

The above are the only allowable excuses for taking the exam before the scheduled time. Under no circumstances do we give late exams. Since we can only accommodate a limited number of students taking the exam at an earlier time, please make sure that you fall into one of the above categories before you contact us. If you miss an exam due to illness or a family emergency, you will not be penalized. The missed exam will be replaced with the final exam grade. If you have a conflict with the final exam (other than another exam at the same time), you must contact the Registrar. Only the Registrar can schedule an out-of-sequence final exam.

The Class Environment

- The format for this course will probably be different from your previous math classes. Students spend time working, discussing, and explaining problems. You should not expect that the instructor will lecture, or that you will have a clearly defined set of notes or PowerPoint-type slides. Instead, you and your classmates will construct your own knowledge with the professor facilitating discussions and asking questions. Getting used to this format requires some time, so be patient.
- I will send emails to the entire class during the course. Check your D2L email daily.

Acceptable Student Behavior

Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

Making Your Homework Easy to Read and Easy to Grade

- Make sure your handwriting is legible.
- In the upper right-hand corner you should write (in this order)
  - Your name
  - The homework set number
  - The due date of the homework
- Problems should be clearly labeled and numbered on the left side of the page. There should also be a visible separation between problems.
- To ensure that each problem is graded, problems and solutions should be written in the order that they are assigned.
- It is good practice to first work out the solutions to homework problems on scratch paper, and then to neatly write up your solutions. This will help you turn in a clean finished product.
- You should write up your solutions by yourself. You should always acknowledge any help received at the top of the assignment or in the right-hand margin.
- Individual and group help is available at the Academic Assistance and Resource Center, which is located on the first floor of the Steen Library.
- Take advantage of the instructor by emailing questions or setting up an appointment for a meeting.
Add/Drop Policy
The Add/Drop Policy can be found at http://www.sfasu.edu/policies/add_drop.asp

Attendance Policy
Regular attendance is expected in Math 127. Attendance and Excused Absences Policy can be found at http://www.sfasu.edu/policies/class_attendance_excused_abs.asp

- Regular attendance (online participation) is expected in math 127. Exam make-ups must be approved beforehand with documentation of a valid university sanctioned excuse.
- Late work is NOT accepted
- Bring your university ID card to all exams

Course Outline:

- Techniques of problem solving and estimation skills 15%
- Explicit instruction in Critical Thinking, Communication and Empirical and Quantitative Reasoning is in addition to implicit instruction, modeling and practice that occur daily in the discussion of numbers and operations. This explicit instruction includes explanation of solving mathematical problems by thinking critically, communicating logically ordered solutions with complete and correct notation, and applying empirical or quantitative skills as appropriate to the problem.

The following topics will be threaded throughout the course in order to develop the habits of mind necessary to be successful in mathematics:

- Introduce Polya’s Problem Solving Process: Understand the Problem, Devise a Plan, Carry Out Plan, Look Back
- Explore Basic Problem Solving Strategies
- Explore Patterns in Language and Numbers
- Develop Estimation Skills with Mental Arithmetic
- Investigate temperature as a form of measurement

- Whole Numbers and Numeration: Concepts and Algorithms 25%
  - Define the Set of Whole Numbers
  - Model Whole Number Operations using a Variety of Methods, including Strip Diagrams, Number Lines, and Manipulatives
  - Verify Properties of Operations: Commutative, Associative, Distributive Property of Multiplication over Addition, Multiplication by Zero
  - Explore Place Value in the Base-10 System
  - Develop and Apply Algorithms for Whole Number Operations, including Standard and Extended/Partial Algorithms

- Number Theory: An Introduction 10%
  - Define and Explore Primes and Composites
  - Explore Basic Divisibility Properties of Sums and Products
  - Define the GCD and LCM and Use Algorithms for Finding Each

- Integers: Concepts and Algorithms 25%
  - Model Integer Operations Using A Variety Of Methods, including Strip Diagrams, Number Lines, and Manipulatives
  - Investigate Extensions of Whole Number Operations and their Properties: Commutative, Associative, Distributive Property of Multiplication over Addition, Multiplication by Zero

- Real Numbers: Concepts and Algorithms 25%
  - Investigate Practical Uses for Fractions
  - Explore Connections between Fractions, Rational Numbers, Decimals, and Percents
  - Investigate Order And Operations in Decimal Form
  - Develop Proportional Thinking to Include Ratio and Proportion

- Explicit instruction in Critical Thinking, Communication and Empirical and Quantitative Reasoning is in addition to implicit instruction, modeling and practice that occur daily in the discussion of numbers and operations. This explicit instruction includes explanation of solving mathematical problems by thinking critically, communicating logically ordered solutions with complete and correct notation, and applying empirical or quantitative skills as appropriate to the problem.
Academic Integrity (A-9.1)
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades Semester Grades Policy (A-54)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.