Department of Mathematics and Statistics
Math 127.003 – Introduction to Mathematics for Elementary Teachers
Spring 2019

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Email: longjh@sfasu.edu
Phone: 936-468-1804
Office: Math Building, Room 318
Office Hours: By appointment, or

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</thead>
<tbody>
<tr>
<td>Mondays</td>
<td>12:00-1:00pm</td>
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<tr>
<td>Tuesdays</td>
<td>2:00-3:00pm</td>
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<td>Wednesdays</td>
<td>12:00-1:00pm</td>
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<td>Thursdays</td>
<td>11:30am-12:30pm</td>
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<tr>
<td>Fridays</td>
<td>1:00-2:00pm</td>
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Class meeting time and place: 2:30-3:45pm, Mondays and Wednesdays, Math Building Room 209

Course Description: Elementary concepts of sets, numeration systems, number theory, and properties of the natural numbers, integers, rational, and real number systems with an emphasis on problem solving and critical thinking.

Text and Materials
The textbook for this course is


A bound copy, loose-leaf copy, or electronic (eBook/online) copy of the textbook are acceptable. Please see D2L (more on that system below) for eBook registration instructions. The eBook course ID is prince72237. *Students must bring paper copies of class activities to class meetings each day*, so students using the eBook should plan to print these pages to bring to class.

Students are advised to keep this text for use in future courses (MTH 128, MTH 129) and as a reference for classroom teaching.

- Calculators will not be used in this course.

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 use, understand, and increase skills in problem solving and critical thinking.

Course Requirements

- *Three in-class exams*, 75 minutes, no calculators permitted, covering course content, on the dates listed below
- *Final exam*, 120 minutes, no calculators permitted, cumulative and comprehensive, covering course content, on the date listed below
• *Homework from the course text*, collected and graded according to the attached homework policy. Expect to turn in homework each class day. Late work is not accepted

• *WebWork* online homework assignments for practice with mathematical skills. Further information will be provided by the instructor. Assignments are typically due on Fridays at midnight

• *Writing assignments* covering the Texas Essential Knowledge and Skills (TEKS) and other topics relevant to teaching mathematics

• *Attendance* is required and expected. See policy below

• *Initiative to seek help outside of class* may be necessary for your success

• *Bring required class activity pages to class each day*

• *Basic number sense and fluency with arithmetic operations of addition, subtraction, multiplication, and division* is necessary. You may need to put in additional study time to develop this fluency. Discuss this with your instructor if you have questions

• *Additiona l assignments* at the instructor’s discretion may be assigned and graded

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**Grading Policy**

<table>
<thead>
<tr>
<th>Component</th>
<th>Date</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>WebWork/TEKS Writing Assignments</td>
<td>Writing Assignments are tentatively due on the day of class following Exams 1, 2, and 3</td>
<td>5%</td>
</tr>
<tr>
<td>Textbook Homework</td>
<td>Class assignment due according to dates on calendar</td>
<td>15%</td>
</tr>
<tr>
<td>Exam I</td>
<td>Wednesday, February 13, 2019</td>
<td>20%</td>
</tr>
<tr>
<td>Exam II</td>
<td>Wednesday, March 13, 2019</td>
<td>20%</td>
</tr>
<tr>
<td>Exam III</td>
<td>Wednesday, April 24, 2019</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td><strong>Tuesday, May 14, 2019, at 6:45-8:45 PM in Kennedy Auditorium</strong></td>
<td>20%</td>
</tr>
</tbody>
</table>

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>
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</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>

*Resurrection Policy.* If you score a 70 or better on the final exam, we will replace your lowest midterm grade with your final exam grade if the midterm grade is lower. The resurrection policy does not apply to your homework or Attendance/TEKS Writing Assignments grade.

**Attendance Policy**

Regular attendance is expected and necessary for your success in MTH 127. Attendance and Excused Absences Policy can be found at [http://www.sfasu.edu/policies/class_attendance_excused_abs.asp](http://www.sfasu.edu/policies/class_attendance_excused_abs.asp)

Exams are scheduled far in advance, and it is impossible to move the time or date. However, in rare cases where it is impossible for an individual to take the exam at the scheduled time, we will work with you to make other arrangements. The only exceptions for taking the exam out of sequence are the following:

1. A medical excuse. Please provide proper documentation according to university rules.
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 Classroom
Any questions you ask in class will likely be ones that other students will want answered as well, so get over any hesitation you might have and ask questions as the material is presented. You will not be penalized for doing this, no matter how trivial or simple you think your questions might seem. Remember, the class is being held for you to learn the material, not just to give you a time to copy notes off of a blackboard, so be sure to get help when you need it and stay involved in your class. Please be respectful of your fellow students and your instructor. Cell phone use and texting are not allowed in class. Remember to turn your cell phone off or place it in quiet mode before entering the classroom. You will be required to put your cell phone in a basket for the duration of the class period if I see you use it during class. Research shows that human brains cannot multitask complex, abstract information with cell phone usage, so this policy is designed for your benefit.

Getting Help with MTH 127
- 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 office hours.

Cell Phone Policy
When entering the classroom, cell phones should be turned to silent and placed in your backpack or pocket out of sight. If a cell phone is out during class, you will be asked to place the cellphone in a basket until the end of class.

The following is an excerpt from SFA Policy 5.4:
The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;
2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

For our class, this means **YOU SHOULD PLAN TO STUDY FOR 6 HOURS EACH WEEK.**

See [http://www2.sfasu.edu/math/docs/syllabi/MTH127Syllabus.pdf](http://www2.sfasu.edu/math/docs/syllabi/MTH127Syllabus.pdf) for elements common to all sections.
Course description: Elementary concepts of sets, numeration systems, number theory, and properties of the natural numbers, integers, rational, and real number systems with an emphasis on problem solving and critical thinking.

Core Objectives (CO):
1. Critical Thinking [CO 1]: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. Communication Skills [CO 2]: to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. Empirical and Quantitative Skills [CO 3]: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Credit hours: 3

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Course Prerequisites and Corequisites: See general course prerequisites.

General Education Core Curriculum: This course has been selected to be part of SFA’s core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L, the assessment management system selected by SFA to collect student work for core assessment.

The chart below indicates the core objectives identified by SFA to be assessed in this course. The instructor of each section of the course will provide the assignment(s) that will be used to assess the objectives as well as the date(s) by which the assignments must be completed and uploaded in D2L.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in D2L</th>
</tr>
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<tbody>
<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas though written, oral, and visual communication.</td>
<td>The instructor of each section will determine the assignment for this assessment.</td>
<td>Only assessed in the fall of even years (See instructor of your section for due date(s)).</td>
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</tbody>
</table>
Course outline:

- Techniques of problem solving and estimation skills [CO 1, 2, 3] 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, Figures, Numbers, Sequences and Geometry
    - Develop Estimation Skills with Mental Arithmetic
    - Investigate temperature as a form of measurement
- Whole Numbers and Numeration: Concepts and Algorithms [CO 1, 2, 3] 25%
  - Define the Set of Whole Numbers
  - Model Whole Number Operations using a Variety of Methods
  - Verify Properties of Operations: Binary Operation; Closed, Commutative, Associative, Distributive Property of Multiplication over Addition, Identities, Multiplication by Zero; Division Algorithm
  - Explore Place Value Systems using Base Five Arithmetic
  - Develop and Apply Algorithms for Whole Number Operations
  - Develop Definition and Properties for Whole Number Exponents
- Number Theory: An Introduction [CO 1, 2, 3] 10%
  - Define and Explore Primes and Composites
  - Explore Basic Divisibility Properties of Sums and Products
  - Explore Applications of the Fundamental Theorem of Arithmetic
  - Define the GCD and LCM and Use Algorithms for Finding Each
- Integers: Concepts and Algorithms [CO 1, 2, 3] 25%
  - Model Integer Operations Using a Variety of Methods
  - Investigate Extensions of Whole Number Operations and their Properties: Closed, Commutative, Associative, Distributive Property of Multiplication over Addition, Identities, Additive Inverse, Multiplication by Zero
- Real Numbers: Concepts and Algorithms [CO 1, 2, 3] 25%
  - Investigate Practical Uses for Fractions
  - Explore Connections between Fractions, Rational Numbers, Decimals, and Percents
  - Investigate Order of Numbers in Decimal Form
  - Illustrate the Pythagorean Theorem
  - Develop Proportional Thinking to Include Ratio and Proportion, Properties of Proportions, Fundamental Law of Fractions

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

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.

The penalty for a student found cheating on any part of an assignment, quiz, or exam in this class will range from a grade of zero on the work to a grade of F in the course, and may result in additional, more severe disciplinary measures. A student who allows another to copy his work and the student copying the work are both guilty of cheating. Do your own work. Do not show your completed work to others. Do not allow others to copy your work.

Definition of Academic Dishonesty (SFA policy 4.1):
Academic dishonesty includes both cheating and plagiarism. Cheating includes, but is not limited to:

- using or attempting to use unauthorized materials on any class assignment or exam;
- falsifying or inventing of any information, including citations, on an assignment;
- helping or attempting to help other student(s) in an act of cheating or plagiarism.

Plagiarism is presenting the words or ideas of another person as if they were one’s own. Examples of plagiarism include, but are not limited to:

- submitting an assignment as one’s own work when it is at least partly the work of another person;
- submitting a work that has been purchased or otherwise obtained from the Internet or another source;
- incorporating the words or ideas of an author into one’s paper or presentation without giving the author credit.

Withheld Grades Semester Grades (SFA Policy 5.5)
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. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

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.

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 10.4). 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.

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]

There are no specific program learning outcomes for this major addressed in this course. It is a general education core curriculum course and/or a service course.

Date of document: 01/11/2019