Course Description
Properties of the natural numbers, integers, rational, and real number systems, and number theory, with 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
- Danielle Johnson, Department of Mathematics and Statistics
- Office: Math 349
- TEL: (936) 468-1521
- Email: drjohnson@sfasu.edu
- Office Hours:
  - Monday: 11 am – 12:45 pm
  - Tuesday: 1:00 pm – 1:45 pm
  - Wednesday: 10 am – 11 am, 12:00 pm – 12:45 pm
  - Thursday: 1:00 pm – 1:45 pm
  - Additional office hours by appointment
  - Expect to receive response to email within 24 hours on weekdays and 48 hours on the weekends.

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

*** You will need a collection of approximately 1000 toothpicks and 30 rubber bands to complete required activities.

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.

Course Requirements:
- Final exam (lasting 2 hours)
- Three in-class exams (either on SFA campus at appointed times or with a proctor at another location), dates listed below
- D2L access. You will be required to access SFA’s Learning management Software (at https://d2l.sfasu.edu) daily
- Homework from the textbook will be collected (via dropbox on d2L) and graded. Read the homework grading policy as found on D2L carefully. Some assignments may be returned to you for additional effort before a grade is entered.
- Attendance (online) and participation (online) 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 three 75 minute exams during the semester and a 2 hr. comprehensive final exam. 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, Other graded D2L assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Exam I</td>
<td>Feb. 5 - 7</td>
<td>20%</td>
</tr>
<tr>
<td>Exam II</td>
<td>Mar 5 -7</td>
<td>20%</td>
</tr>
<tr>
<td>Exam III</td>
<td>Apr 9-11</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>May 7-9 (see tentative course timeline in the Getting Started Module for more details)</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>
</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 I calculate your final grade at the end of the course, I 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.

Resurrection Policy. If you score better on the final exam than your lowest midterm exam, we will replace your midterm grade with your final exam grade. The resurrection policy only applies to exams.
Exam Policy

Exams in this course must be proctored. You may take exams at the SFA campus with a proctor (on the Wednesday of exam week in Math 101 from 4pm – 8 pm. Realize that you will only be given 75 minutes to take the exam.) or you may elect to take exams with an approved proctor at another location. 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 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 Class Environment

- The format for this course will probably be different from your previous math classes. You should spend lots of time reading the material, understanding the material, and working on class activities and homework that is assigned. Also, there are several discussion posts that are required and are part of your grade. Please check the Tentative course Timeline in the Getting Started Module for due dates and assignments.

- 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
  - MTH 127.004 or MTH 127.005
  - 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 office hours (if possible)

**Add/Drop Policy**
The Add/Drop Policy can be found at [http://www.sfasu.edu/policies/add_drop.asp](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](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

**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

**Course Outline:**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Approximate time spent</th>
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<tbody>
<tr>
<td>Techniques of problem solving and estimation skills</td>
<td>15%</td>
</tr>
<tr>
<td>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:</td>
<td></td>
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<tr>
<td>o Introduce Polya’s Problem Solving Process: Understand the Problem, Devise a Plan, Carry Out Plan, Look Back</td>
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<tr>
<td>o Explore Basic Problem Solving Strategies</td>
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<td>o Explore Patterns in Language and Numbers</td>
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<tr>
<td>o Develop Estimation Skills with Mental Arithmetic</td>
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<tr>
<td>o Investigate temperature as a form of measurement</td>
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<tr>
<td><strong>Whole Numbers and Numeration: Concepts and Algorithms</strong></td>
<td>25%</td>
</tr>
<tr>
<td>o Define the Set of Whole Numbers</td>
<td></td>
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<tr>
<td>o Model Whole Number Operations using a Variety of Methods, including Strip Diagrams, Number Lines, and Manipulatives</td>
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<tr>
<td>o Verify Properties of Operations: Commutative, Associative, Distributive Property of Multiplication over Addition, Multiplication by Zero</td>
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<tr>
<td>o Explore Place Value in the Base-10 System</td>
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<tr>
<td>o Develop and Apply Algorithms for Whole Number Operations, including Standard and Extended/Partial Algorithms</td>
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<tr>
<td><strong>Number Theory: An Introduction</strong></td>
<td>10%</td>
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<tr>
<td>o Define and Explore Primes and Composites</td>
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<tr>
<td>o Explore Basic Divisibility Properties of Sums and Products</td>
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<tr>
<td>o Define the GCD and LCM and Use Algorithms for Finding Each</td>
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<tr>
<td><strong>Integers: Concepts and Algorithms</strong></td>
<td>25%</td>
</tr>
<tr>
<td>o Model Integer Operations Using A Variety Of Methods, including Strip Diagrams, Number Lines, and Manipulatives</td>
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</tr>
<tr>
<td>o Investigate Extensions of Whole Number Operations and their Properties: Commutative, Associative, Distributive Property of Multiplication over Addition, Multiplication by Zero</td>
<td></td>
</tr>
<tr>
<td><strong>Real Numbers: Concepts and Algorithms</strong></td>
<td>25%</td>
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<tr>
<td>o Investigate Practical Uses for Fractions</td>
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<tr>
<td>o Explore Connections between Fractions, Rational Numbers, Decimals, and Percents</td>
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<tr>
<td>o Investigate Order And Operations in Decimal Form</td>
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</tbody>
</table>
• 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 (Policy 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.

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**

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](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. 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](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 D-34.1 [http://www.sfasu.edu/policies/student_conduct_code.asp](http://www.sfasu.edu/policies/student_conduct_code.asp)). 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.