MTH 128 – Spring 2019
Intermediate Mathematics for Elementary Teachers

Course Description
Elementary concepts of geometry and measurement, probability, and statistics with an emphasis on problem solving and critical thinking

Course Prerequisites
MTH127.

Course Time and Meeting Place
- MTH 128 Section 003 meets in Math 205 at 9:30-10:45 TR
- MTH 128 Section 004 meets in Math 205 at 12:30-1:45 TR
- MTH 128 Section 005 meets in Math 205 at 2:00-3:15 TR

Instructor
- Dr. W. D. Clark  Department of Mathematics and Statistics
- Office: Math 314
- TEL: Ofc (936) 468-1750  Home (936) 569-0522  Cell (936) 554-3371
- Email: clark@sfasu.edu
- Office Hours: Monday 10-11, 2-3 and Wednesday 10-11, 2-3
  Additional office hours by appointment

Course Goals
- To understand the mathematics essential to successful teaching in the elementary school classroom.
- To acquire a foundation in geometry, statistics, probability, and counting.
- To gain skill in problem solving and critical thinking.

Learning Objectives
At the end of MTH 128, a student who has studied and learned the material should be able to:
- Use problem solving strategies to model, construct, and solve problems within and outside mathematics
- Use technology to explore geometric concepts and perform geometric constructions and transformations
- Apply spatial visualization skills to construct, transform, and measure two and three dimensional objects
- Apply concepts of congruence and similarity
- Understand measurement as a process and apply basic concepts of measurement to real world settings
- Use basic counting principles and apply concepts of probability theory
- Apply basic concepts of statistics, including data classification, collection, and analysis

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.

Textbook and Materials
A compass used for drawing and a simple four function calculator with square root capability will be needed for this course. The textbook for this course is Mathematics for Elementary Teachers

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 a blackboard, so be sure to get help when you need it and stay involved in your class.

Calculators
A simple four-function calculator will work fine for this course. We encourage you to bring your calculator to class with you every day. However, you should not rely on computers and calculators to such an extent that they keep you from developing your own skills. Technology should be used as an aid, but without a good understanding of the underlying mathematical concepts, the calculator will quite happily mislead you without your even knowing it. In general, technology is a good thing, but as with everything, sometimes too much of a good thing can lead to problems. For this reason, we may not allow calculators to be used on certain exams or parts of certain exams. You may not use your cellphone or your iPod/iPad in class for a calculator.
Grading and Exams
The will be three 75 minute exams and a 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>Hmk /quiz/Dg</td>
<td>Book assignment due dates on calendar</td>
<td>15%</td>
</tr>
<tr>
<td>TEKS Writing Assignment</td>
<td>Due on the class day following Exams 1, 2, and 3. Namely, February 14, March 14, April 30</td>
<td>5%</td>
</tr>
<tr>
<td>Exam I</td>
<td>Tuesday 2/12/19</td>
<td>20%</td>
</tr>
<tr>
<td>Exam II</td>
<td>Tuesday 3/12/19</td>
<td>20%</td>
</tr>
<tr>
<td>Exam III</td>
<td>Thursday 4/25/19</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Monday, May 13, 2019 6:45-8:45pm</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>

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.

Resurrection Policy. If you score 70 or better on the final exam then your lowest grade on exam I, II or III, will be replaced by your final exam grade. The resurrection policy does not apply to your homework grade.

Important Information about the Math 128 Final Exam
The final exam for all MTH 128 is on Monday, May 13, 2019, 6:45-8:45pm in the Kennedy Auditorium. Cell phone use is not permitted in or out of the classroom during all exams. If you bring your cell phone to the exam venue, please remember to turn it off. Violation of this policy will be considered as academic dishonesty and dealt with accordingly. You will not be permitted to use your cell phone as a calculator, so plan ahead.

Exam Policy
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. 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. Your final exam grade will also count as the grade for a test you miss. 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.
Homework will be assigned from our textbook and graded. Your daily average is based on your graded homework, any daily quizzes given, and any daily grades given.

Making Your Homework Easy to Read and Easy to Grade

- Make sure your handwriting is legible.
- Homework with multiple pages should be stapled in the upper left-hand corner.
- Use only the front side of your paper for your homework assignments.
- In the upper right-hand corner you should write (in this order):
  - Your name
  - MTH 128, section number (003, 004 or 005)
  - 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. Don't forget to staple your homework together if you are submitting several pages.
- Use only the front side of your pages. Your homework will not be graded if you use both sides of your pages.
- You should leave the entire left margin blank so that the grader can use this space for scoring and comments.
- 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.
- Homework is to be turned in at the beginning of class.
- Late homework is not accepted as is homework that does not follow the guidelines above.

Getting Help with Math 128

- 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 and email. I will make every effort to answer emails within 24 hours on weekdays and within 48 hours on weekends. Please use the clark@sfasu.edu email to receive the quickest response.

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 128. Attendance and Excused Absences Policy can be found at http://www.sfasu.edu/policies/class_attendance_excused_abs.asp

Credit Hours 3-Explanation

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.

See http://www2.sfasu.edu/math/docs/syllabi/MTH128Syllabus.pdf for elements common to all sections.
**Course description:** Provides an introduction to mathematical thinking emphasizing analysis of information for decision-making.

**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

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:

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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>
</thead>
<tbody>
<tr>
<td>Empirical and Quantitative Skills</td>
<td>To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.</td>
<td>The instructor of each section will determine the assignment for this assessment.</td>
<td>Only assessed in spring of odd years. (See instructor for due date(s).)</td>
</tr>
</tbody>
</table>
Outline of Suggested Topics: The following is a list of suggested topics. These topics can be augmented or diminished, as long as the objectives for the course are practiced. Decisions concerning order of presentation are left to individual instructors.

Course outline:  

- Critical Thinking (Chapter 1) [CO: 1,2,3]  
  - Inductive and Deductive Reasoning  
  - Problem-Solving with Patterns  
  - Problem-Solving Strategies  
- Logic (Chapter 2) [CO: 1,2,3]  
  - Logic, Statements, and Quantifiers  
  - Truth Tables, Equivalent Statements and Tautologies  
  - The Conditional and Biconditional  
  - The Conditional and Related Statements  
  - Arguments  
- Set Theory (Chapter 3) [CO: 1,2,3]  
  - Basic Properties of Sets  
  - Complements, Subsets and Venn Diagrams  
  - Set Operations  
  - Infinite Sets  
- Financial Mathematics (Chapter 11) [CO: 1,2,3]  
  - Simple Interest  
  - Compound Interest  
  - Credit Cards and Consumer Loans  
  - Stocks, Bonds and Mutual Funds  
  - Home Ownership  
- Counting and Probability (Chapter 12) [CO: 1,2,3]  
  - The Counting Principle  
  - Permutations and Combinations  
  - Probability and Odds  
  - Addition and Complement Rules  
  - Conditional Probability  
  - Expectations  
- Statistics (Chapter 13) [CO: 1,2,3]  
  - Measures of Central Tendency  
  - Measures of Dispersion  
  - Measures of Relative Position  
  - Normal Distributions  
  - Linear Regression and Correlation  
- 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 logic, sets, financial mathematics, counting, probability, and statistics. 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 110, a student who has studied and learned the material should be able to:

1. Demonstrate understanding of elementary logic in order to make persuasive arguments, understand conflicting reports, identify faulty reasoning, detect bias, assess risk, suggest alternatives, and draw solid conclusions. [CO: 1,2,3]
2. Use sets as a tool for organizing information, recognize that relationships between and among sets provide the foundation for many valid arguments. [CO: 1,2,3]
3. Use counting techniques, estimation, proportional reasoning, percents, and unit conversions to more ably interpret numerical quantities that occur in everyday life. [CO: 1,2,3]
4. Demonstrate understanding of basic probability and how it is involved in virtually every decision we make – either explicitly or implicitly. [CO: 1,2,3]
5. Use statistics to critically evaluate and interpret statistical studies and corresponding reports. [CO: 1,2,3]
6. Use functions to model various relationships with enough precision to gain insight into how things work and to make reasonable predictions about the future. [CO: 1,2,3]
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