MTH 1350: 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/docs/syllabi/MATH1350Syllabus.pdf

Prerequisite(s): MATH 0199 or TSI complete/exempt status in mathematics

Course Time and Meeting Place
Bright Space (D2L)

Instructor
Mrs. Stacia Prince,
Department of Mathematics and Statistics
Office: Bush Mathematics 103J (or 334 check the 103J office first)
Office Phone: 936-468-6262
Email: princes@sfasu.edu

Office Hours: Anytime my door is open, by appointment or
Wednesday: 2:00pm-4:00pm
Tuesday and Thursday: 10:30am – 12:00pm (noon)

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.

Current Text and Materials
Textbook: Mathematics for Elementary Teachers, 5th ed., by Sybilla Beckman. The textbook is available in hardback (ISBN 9780134392790), loose-leaf (ISBN 9780134423319), or electronic “eBook” (ISBN 9780134423401) formats. Any format is acceptable. This textbook will also be used in MATH 1351 and MATH 1352. You will NOT need to purchase access to MyMathLab.

Other materials: Calculators are not used in this course. Some class activities use common office supplies and/or manipulatives. Most of the manipulatives can be found in a virtual format online. Blackline masters for class activities are located in the modules under Content in Bright Space (D2L).

Homework Average
All assignments can be found on the MTH 1350 Tentative Course Calendar. The Homework average is based on your grades from textbook homework, quizzes, discussion board posts and replies, and any other graded assignment. At least one textbook homework grade and at least one discussion board grade will be dropped when calculating the final Homework average. Late homework will not be accepted.

Discussion Boards
MTH 1350 is an activity based course. The discussion boards in this course are used for you to discuss the activities and ask questions for a better understanding of the concepts. The activities along with the textbook will help you develop an understanding of the concepts in each section. Any questions you have will likely be questions other students want answered as well, so please do not have any hesitation about asking questions about the material on the general discussion boards for each module in Bright Space (D2L). Please as questions, no matter how trivial or simple you think your questions might seem. Remember, in an online class format we do
not meet on a regular basis, so it is important to ask questions in this format. Notice, there are general discussion boards and required discussion boards. See the MTH 1350 Tentative Course Calendar located under Content in the Bright Space (D2L) course for specific required discussion boards. All required discussion posts are due on Tuesdays by 11:59pm.

**Homework and Quizzes**

All assignments can be found on the MTH 1350 Tentative Course Calendar located under Content in the Bright Space (D2L) course. Homework will be assigned from our textbook and graded in the dropbox folder. Textbook homework is due each Friday night by 11:59pm. Textbook homework should be scanned and uploaded as a single PDF to the appropriate dropbox folder in Bright Space (D2L).

**Making Your Homework Easy to Read and Easy to Grade**

- Make sure your handwriting is legible.
- Homework with multiple pages should be scanned as a single pdf to upload in the appropriate D2L dropbox folder.
- In the upper right-hand corner, write your name and page number.
- 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.
- I will give feedback on each problem using the annotated notes and/or the Feedback section in the dropbox folder.

**Getting Help with Math 1350**

- Take advantage of office hours and email. Please use the princes@sfasu.edu email to receive the quickest response.
- Individual and group help is available at the Academic Assistance and Resource Center (AARC), which is located on the first floor of the Steen Library or virtual. Specific hours for the section are listed on Bright Space (D2L).
- I know you can “Google” almost any information, but developing an understanding of the concepts in this class is much more important than a correct answer on an assignment. This is why I give feedback on homework and at times allow you to redo homework questions based on the feedback before I enter a grade on the textbook homework.

**Exam Policy**

Exams are scheduled during a window in which you will take the exam. It is not possible to move the time or date. In rare cases due to unavoidable circumstances an individual will have an emergency during the scheduled time. In case of an emergency notify the instructor immediately. 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 Office of Student Rights and Responsibility 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.
**Course Grade**
There will be three 75 minute exams during the semester and a 2 hour 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>Class assignments are due according to dates on the MTH 1350 Tentative Course Calendar in the Course Documents module in Bright Space (D2L). Discussion Board posts and replies are due each Tuesday by 11:59pm. Textbook homework is due each Friday by 11:59pm.</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>See MTH 1350 Tentative Course Calendar</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>See MTH 1350 Tentative Course Calendar</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>See MTH 1350 Tentative Course Calendar</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>See MTH 1350 Tentative Course Calendar</td>
<td>20%</td>
</tr>
</tbody>
</table>

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

<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>

**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 grade.
Math 1350 – Introduction to Foundation of Mathematics I  
Course Syllabus

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.

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:

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.

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.

By enrolling in MTH 1350 – Introduction to Mathematics for Elementary Teachers you are also enrolling in a Core Curriculum Course that fulfills the Mathematics Core Objective requirement.

The chart below indicates: (a) The core objectives that are required to be taught in this course per the Texas Higher Education Coordinating Board (THECB), (b) How the required core objectives will be addressed.

[Examples of the things that can be included in the final column are: Specific assignments, class module(s), chapter(s), strategies, activities, and/or techniques that address the core objectives.]
Core Curriculum Objective Table

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>How the Core Objective Will be Addressed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Skills</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Inquiry-based activities – Reasoning about Rounding, Fractions, etc.</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas though written, oral, and visual communication.</td>
<td>Explanation of concepts along with diagrams on activities</td>
</tr>
<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>Using and explaining algorithms to determine products and quotients.</td>
</tr>
</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

sfasu.edu/math
Math 1350 – Introduction to Foundations of Mathematics I
Syllabus Continuation

- 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]
  - 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.

sfasu.edu/math
SFASU Mental Health Statement: SFASU values students’ mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
SFASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
www.sfasu.edu/humanservices/139.asp
Human Services Room 202
936-468-1041

Crisis Resources:
Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741

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: 08/09/2021