MTH 110 Mathematics in Society
Department of Mathematics and Statistics
Current Semester

Professor: **Dr. Arbitrary Sample**   **Class Times & Place:** 11-11:50 MWF, Room 024, Math Building
Office: 023 Mathematics building
Email: asample@sfasu.edu
Office Phone: 936.867.5309
Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
9-10, 1:30-3	None	9-10, 1:30-3	9-11, 2-3	9-10

Course description: Provides an introduction to mathematical thinking emphasizing analysis of information for decision-making.

CURRENT Text and Materials: The required textbook is *A Survey of Mathematics with Applications, 9th edition,* by Angel, et. al., ISBN 0321837533. This includes a semester's access to the homework system myMathLab. Topics covered this semester are included in chapters 1, 2, 3, 11, 12, and 13 of the textbook. For exams, students may use only a non-programmable, non-graphing calculator.

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

SAMPLE Exam Calendar: Please note that the dates for our in-class exams below are **subject to change**. The final is university scheduled and cannot be taken at a different time without permission of the Dean of the College of Sciences and Mathematics.

Exam 1 [CO 1, 2, 3] (Critical Thinking and Sets)   Thursday, February 7
Exam 2 [CO 1, 2, 3] (Logic and Finance)   Thursday, March 7
Exam 3 [CO 1, 2, 3] (Probability and Statistics)   Thursday, April 11
Final   [CO 1, 2, 3] Monday, May 6, 10:30 a.m.—12:30 p.m. in our regular classroom

SAMPLE Course Requirements/Assignments:
- *Three in-class exams*—If a student must miss an exam due to an excused absence, special arrangements should be made in advance. Student ID with photo may be required for exams. **No cell phone or graphing calculators will be allowed on exams.** You will need to bring your own calculator to exams. The first three exams consist of problems similar to those practiced in class and homework for which students must think critically [CO 1] to make a plan for solving the problem and incorporate empirical or quantitative reasoning [CO 3] as appropriate to communicate [CO2] a logically ordered solution with complete and correct notation.
- *Weekly in-class quizzes*—We will have weekly in-class quizzes. Weekly quizzes consist of problems similar to those practiced in class and homework for which students must think critically [CO 1] to make a plan for solving the problem, and incorporate empirical or quantitative reasoning [CO 3] as appropriate to communicate [CO 2] a logically ordered solution with complete and correct notation.
- *A comprehensive final exam*—The final exam is Monday, May 6, 10:30 a.m.-12:30 p.m. The comprehensive final exam consists of problems similar to those practiced in class and homework for which students must think critically [CO 1] to make a plan for solving the problem, and incorporate empirical or quantitative reasoning [CO 3] as appropriate to communicate [CO 2] a logically ordered solution with complete and correct notation.
- *Homework*— We will assign exercises from the text from each major topic in the course calendar/outline via the online homework system myMathLab. Students must think critically [CO1] to make a plan for solving the homework problems and incorporate empirical or quantitative reasoning [CO 3] as appropriate to communicate [CO 2] a logically ordered solution with complete and correct notation according to the constraints of the myMathLab software.
- *Class attendance and participation*—Students are expected to attend all class meetings, arriving on time. If you are absent, you are responsible for determining what you missed and for being prepared for class when you return. Leaving class early without notifying the professor in advance will result in your being counted absent for the class session. Students that sleep in class, send or receive text messages, or conduct other online activities not directly related to class will be counted absent.
- *Preparing for class*—Students should be prepared to invest several hours per day outside of class reading the text, practicing examples, and working homework exercises. *Material to be discussed in class should be read before coming to class.* Check your university email regularly, as I may send reminders, assignments, or announcements

Grading Policy: 60%   Three in-class *exams* [CO: 1,2,3]   **Grading Scale:**   90% - 100%: A
    10%   In-class *quizzes* [CO: 1,2,3]   80% - 90%: B
    10%   *Homework* assignments in myMathLab [CO: 1,2,3]   70% - 80%: C
    20%   Comprehensive Final *Exam* [CO: 1,2,3]   60% - 70%: D
    Below 60%: F

<u>Department syllabus</u>: Please read the official Department of Mathematics & Statistics syllabus for MTH 110 at
http://www.sfasu.edu/math/courses/syllabi/MTH110Syllabus.pdf.

Course calendar/outline:	Approximate time spent
• Critical Thinking (Chapter 1) [CO: 1,2,3]	16%

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  - o Inductive and Deductive Reasoning
  - o Problem-Solving with Patterns
  - o Problem-Solving Strategies
- Logic (Chapter 2)) [CO: 1,2,3]   16%
  - o Logic, Statements, and Quantifiers
  - o Truth Tables, Equivalent Statements and Tautologies
  - o The Conditional and Biconditional
  - o The Conditional and Related Statements
  - o Arguments
- Set Theory (Chapter 3)) [CO: 1,2,3]   16%
  - o Basic Properties of Sets
  - o Complements, Subsets and Venn Diagrams
  - o Set Operations
  - o Infinite Sets
- Financial Mathematics (Chapter 11)) [CO: 1,2,3]   16%
  - o Simple Interest
  - o Compound Interest
  - o Credit Cards and Consumer Loans
  - o Stocks, Bonds and Mutual Funds
  - o Home Ownership
- Counting and Probability (Chapter 12)) [CO: 1,2,3]   16%
  - o The Counting Principle
  - o Permutations and Combinations
  - o Probability and Odds
  - o Addition and Complement Rules
  - o Conditional Probability
  - o Expectations
- Statistics (Chapter 13)) [CO: 1,2,3]   16%
  - o Measures of Central Tendency
  - o Measures of Dispersion
  - o Measures of Relative Position
  - o Normal Distributions
  - o 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.

    4%

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.

<u>Definition of Academic Dishonesty</u>
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. 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 D-34.1 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.

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.