MTH 110.001 Mathematics in Society  
Department of Mathematics and Statistics  
SPRING 2019

Instructor: Danielle Johnson  
Office: Room 349, Math building  
Email: drjohnson@sfasu.edu  
Office Phone: 936.468.1521, 936 468-3805 (Math department office)  
Office Hours: Office Hours: **MW: 10 am – 10:45 am**  **Tues: 1 pm – 3:30 pm**, **Thurs: 1-2 pm**  
Other hours by appointment.

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

Required Materials  
Book: *A Survey of Mathematics with Applications, 10th* Ed. by Angel, Abbott, and Runde  
There are two approved versions of the text:  
- eBook (bundled with MyMathLabAccess)

MyMathLab Account: Online homework and quizzes are done through [www.mymathlab.com](http://www.mymathlab.com).  
To create a MML account, students will need:  
1. a valid email address (use your SFA email)  
2. an access code (bundled with new textbooks, or may be purchased separately online)  
3. course id (make sure to use the correct code for your class)  

**MTH 110.004 course id:** [johnson97428](#)

Calculator: You may use a graphing calculator for this course, but you may **not** use a calculator equivalent to a Ti-89 or higher. A Ti-36X Pro (or equivalent) is recommended. **The calculator function of a cell phone will not be permitted during exams.**

You will also be responsible for printing and bringing to class the appropriate fill-in-the-blank notes that will be posted on d2l.

Course Requirements: Daily grades, 4 exams, and a comprehensive final exam, core assessment assignment (see bullet point below)

**Attendance Policy:** I will take attendance. Although your attendance percentage does NOT factor into your numerical grade, attendance and class participation is critical to your success in this class.

Grading Policy:  
| 20% Daily Average (from MML and core assessment) | 90% - 100% | A |
| 60% Tests (4 @ 15% each) | 80% - 89% | B |
| **20% Comprehensive Final Exam** | 70% - 79% | C |
| **100% Final Course Grade** | 60% - 69% | D |
| | 0% - 59% | F |
MyMathLab Homework and Quiz Assignments

- Each textbook section covered in the course has a corresponding homework assignment on MyMathLab. Each assignment consists of several questions, and students have three attempts at the correct answer per question. Generally, the due date for all homework assignments covered in a particular week will be **Wednesday of the following week, at 11:59 PM, but there are some exceptions to this rule.** Check MML frequently for due dates.

20% of your grade will be determined by your **My Math Lab** homework and quiz average and your core assessment assignment. **My Math Lab assignments will not be accepted late.** However, I will drop one or two of the daily grades at the end of the semester. The due dates for My Math Lab assignments will be posted on My Math Lab.

Exams

- Four exams will be given over the course of the semester. Each exam grade comprises 15% of a student’s overall course grade. A student’s final exam grade will replace their lowest regular exam grade (provided that the final exam grade is higher)
- The final exam for this course will be given as scheduled on the university calendar, in our normal classroom. No alternate arrangements will be allowed. The final exam is mandatory.
- **Exam Dates:** Please note that the dates for our in-class exams are in the calendar at the end of the syllabus and 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.

General Policies and Information

- You earn your grade by communicating your understanding of the material through the homework, and tests. Clearly communicating mathematics will be essential in this course.
- I will send e-mails to the entire class during the semester, often through D2L. Make sure you have your personal D2L settings set to forward email notifications. Watch for important class announcements on the D2L newsfeed.
- No cell phone use is permitted in class without special permission from the instructor.
- Students are expected to respect the learning environment of their fellow students. Behavior that disrupts this environment will not be tolerated. Please silence your phone and remove it from the table.
- Tutoring: Visit the AARC (on the first floor of the library) to inquire about tutor support for MTH 110.

Weekly Appointments and Learning Teams: For more focused, course-specific tutoring, the AARC offers weekly one-on-one appointments and Learning Teams. A Learning Team is a group of 8 students from the same course who are coached by a peer tutor (a fellow student). These are student-led groups, so the students choose the topics covered. If you are interested in either one-on-one weekly appointments, or in forming a Learning Team, visit the AARC during the first Open Enrollment period, January 23rd and 24th from 11 am to 6 pm at the AARC.

Testing, Grading, and Make-up Policies

- If you miss an exam for any reason, your zero exam grade will be replaced by your final exam grade. If more than one exam is missed, the final exam grade will replace only one of the missed exams.
- You must bring and display either your SFASU Student ID or a valid driver’s license before you will be permitted to take each test and the final exam. I must be able to recognize you from the photo on the ID.
- You may use your (approved) calculator on exams, but you must present it to me so that I may clear the memory, if so equipped.
- Students **may not share calculators during an exam.** Students **may not use cell phone calculators, etc during an exam.**
• Since you have a full semester to arrange any travel plans, they are not an excuse for missing the final.
• You may get help on work that is assigned to be done outside of class, unless otherwise instructed, but I expect any work that you turn in to reflect your understanding of the material. On in-class graded work, I expect you to only use your brain, pencil, paper, and, sometimes, a calculator.

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/MTH110Syllabus.pdf](http://www2.sfasu.edu/math/docs/syllabi/MTH110Syllabus.pdf) for elements common to all sections.

**General Education Core Curriculum**

The Texas Higher Education Coordinating Board has identified six core learning objectives: 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.

By enrolling in MTH 110: Mathematics in Society, you are also enrolling in a Core Curriculum Course that fulfills the Critical Thinking Skills, Communication Skills, and Empirical and Quantitative Skills requirement. You will see this course on your D2L list. At one point during the semester, you will receive an assignment that fulfills both the requirements of this course and the needs of Stephen F. Austin State University’s Core Curriculum Assessment Plan with the Texas Higher Education Coordinating Board. When you complete this one assignment, you need to upload the assignment to both your standard course dropbox determined by your Instructor and the “Core Curriculum” dropbox. The Core Curriculum dropbox will be identified by the Objective for which work is being collected. (Examples: Critical Thinking, Teamwork, Social Responsibility Empirical & Quantitative Skills, Personal Responsibility, Communication Skills-Written, Communication Skills-Written & Visual, and Communication Skills- Oral & Visual.) Please note that this only applies to the approved assignment. All other assignments should be submitted according to regular class operations.

When you complete the assignment mentioned above, you will upload the assignment to both the MTH 110: Mathematics in Society dropbox and the Critical Thinking Skills, Communication Skills, or Empirical and Quantitative Skills dropbox.
Please note that this only applies to the specific assignment listed in the matrix below. All other assignments should be submitted according to regular class operations.

If you have any questions, please see your instructor, or contact the at Office of Student Learning and Institutional Assessment at (936) 468-1130.

The chart below indicates the core objectives addressed by this course, the assignment(s) that will be used to assess the objectives in this course and uploaded to the D2L Critical Thinking Skills, Communication Skills, or Empirical and Quantitative Skills dropbox this semester, and the date the assignment(s) should be uploaded to the D2L Critical Thinking Skills, Communication Skills, or Empirical and Quantitative Skills dropbox. Not every assignment will be submitted for core assessment every semester. Your instructor will notify you which assignment(s) must be submitted for assessment in the D2L Critical Thinking Skills, Communication Skills, or Empirical and Quantitative Skills dropbox.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
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<tbody>
<tr>
<td>Empirical and Quantitative</td>
<td>To include the manipulation and analysis of numerical data or observable</td>
<td>ASSESSED THIS SEMESTER</td>
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<tr>
<td>Skills</td>
<td>facts resulting in informed conclusions.</td>
<td>DUE: FRIDAY, APR. 26TH</td>
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<tr>
<td>Date Range</td>
<td>Topics</td>
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<td>------------------------------------------------------------------------</td>
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<tr>
<td>1/22-1/25</td>
<td>Course Introduction&lt;br&gt;Study Skills Unit&lt;br&gt;2.1 Set Concepts&lt;br&gt;2.2 Subsets</td>
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<tr>
<td>1/28-2/1</td>
<td>2.2 Subsets (continued)&lt;br&gt;2.3 Venn Diagrams and Set Operations&lt;br&gt;2.4 Set Equality</td>
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<tr>
<td>2/4-2/8</td>
<td>2.5 Applications of Sets&lt;br&gt;3.1 Statements and Logical Connectives&lt;br&gt;3.2 Truth Tables I</td>
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<td><strong>EXAM 1 CHAPTER 2 FRIDAY FEB. 8TH</strong></td>
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<td>2/11-2/15</td>
<td>3.3 Truth Tables II&lt;br&gt;3.4 Equivalent Statements&lt;br&gt;3.5 Symbolic Arguments&lt;br&gt;3.6 Euler Diagrams/Syllogistic Arguments</td>
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<tr>
<td>2/18-2/22</td>
<td>Ch 3 (continued)&lt;br&gt;10.1 Percent&lt;br&gt;10.2 Personal Loans and Simple Interest</td>
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<td><strong>EXAM 2 CHAPTER 3 FRIDAY FEB. 22ND</strong></td>
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<tr>
<td>2/25-3/1</td>
<td>10.2 Personal Loans and Simple Interest (cont.)&lt;br&gt;10.3 Compound Interest</td>
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<tr>
<td>3/4 – 3/8</td>
<td>10.4 Installment Buying&lt;br&gt;10.5 Mortgages</td>
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<tr>
<td>3/11-3/15</td>
<td>10.5 Mortgages (CONTINUED)&lt;br&gt;10.6 Annuities and Sinking Funds</td>
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<td><strong>EXAM 3 CHAPTER 10 FRIDAY MAR. 15TH</strong></td>
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<tr>
<td>3/25-3/29</td>
<td>11.1 Empirical and Theoretical Probabilities&lt;br&gt;11.2 Odds</td>
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<tr>
<td>4/1-4/5</td>
<td>11.4 Tree Diagrams&lt;br&gt;11.5 OR and AND Probability</td>
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<tr>
<td>4/8-4/12</td>
<td>11.6 Conditional Probability&lt;br&gt;11.7 Counting Principle and Permutations</td>
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<tr>
<td>4/15-4/17</td>
<td>11.8 Combinations&lt;br&gt;11.9 Probability and Combinations</td>
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<td><strong>EASTER HOLIDAY 4/18, 4/19</strong></td>
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<tr>
<td>4/22-4/26</td>
<td><strong>Finish Chapter 11</strong>&lt;br&gt;<strong>EXAM 4 CHAPTER 11, FRIDAY, APR 26TH</strong></td>
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<tr>
<td>4/29-5/3</td>
<td>12.3 Measures of Central Tendency&lt;br&gt;12.4 Measures of Dispersion&lt;br&gt;12.5 The Normal Curve</td>
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<tr>
<td>5/6 – 5/10</td>
<td>12.5 The Normal Curve (cont.)&lt;br&gt;Review for final exam /Extra Instruction</td>
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<tr>
<td>5/13 - 5/17</td>
<td><strong>Finals Week</strong>&lt;br&gt;MTH 110.001 Final Exam: Wednesday, May 15th&lt;br&gt;8:00 am – 10:00 am</td>
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**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:*

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.

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] 16%
  - Inductive and Deductive Reasoning
  - Problem-Solving with Patterns
  - Problem-Solving Strategies
- Logic (Chapter 2) [CO: 1,2,3] 16%
  - 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] 16%
  - Basic Properties of Sets
  - Complements, Subsets and Venn Diagrams
  - Set Operations
  - Infinite Sets
- Financial Mathematics (Chapter 11) [CO: 1,2,3] 16%
  - 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] 16%
  - The Counting Principle
  - Permutations and Combinations
  - Probability and Odds
  - Addition and Complement Rules
  - Conditional Probability
  - Expectations
- Statistics (Chapter 13) [CO: 1,2,3] 16%
  - 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. 4%

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.