MTH 1342: Introduction to Probability and Statistics
Fall 2021

Name: Mrs. Cook
Department: Mathematics and Statistics
Email: mmccook@sfasu.edu
Phone: 936-468-1586
Office: Math 335

Class meeting time and place:
Section .072 MW 1:00-2:15 Room 203

Office Hours: Office Hours will be done through zoom or in my office.
https://sfasu.zoom.us/my/cook.officehours
MWF: 11:00 - 11:50 am
TR: 11:00 am – 12:15 pm
Additional times are available by appointment


Course Topics: Probability, random variables, mean and variance, binomial distribution, normal distribution, statistical inference and linear regression.

Objectives and Outcomes: A complete list of program learning objectives, general education core curriculum objectives/outcomes and other course information can be found using the following link:
http://www2.sfasu.edu/math/courses/syllabi/MTH1342Syllabus.pdf

Required Materials:
Text: Introductory Statistics (custom published) by Neil A. Weiss
Package ISBN: 1269959719

Calculator: A scientific calculator with statistics capabilities is required. Graphing calculators are permitted, but not required.

Other Supplies: A 2” binder, dividers, different colored highlighters, pencils

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

Grading Policy:
Grade Breakdown
The final course grade will be computed using the following weights:
Exam 1 - 3 60% (20% each)
Daily Work (may include quizzes) 20%
Comprehensive Final exam 20%
Daily Work

- Online homework will be required using My Math Lab at www.mymathlab.com. When you create an account, use the following:
  - **Section 072: cook88608**
- At the beginning of class, you may ask questions on material covered the previous class period.
- 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. Check your SFA e-mail account frequently.
- **D2L:** Course materials will be located on D2L. It is your responsibility to check D2L daily. You will use your MySFA username and password on the website www.D2L.sfasu.edu.
- To contact me, you may call my office, drop by my office, or e-mail me. I will do my best to reply quickly.
- Students are expected to respect the learning environment of their fellow students. Towards this end, use of mobile phones, mp3 players, PDAs, etc., is forbidden during class.

Exams

- If you miss a test and have a valid excuse, I will replace your missed test grade by your final exam grade. However, your final may only replace one other score.
- **Attendance Policy:** Over 3 unexcused absences may result in a grade reduction.
- 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.
- Since you have a full semester to arrange any travel plans, they are not an excuse for missing the final.
- Students are expected to attend every class meeting, arriving on time. If you have 3 or less absences and score a 70% or better on the final, that score may replace your lowest test grade or your homework grade. If a student leaves class early without permission, the student will be marked absent.
- 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 brains, pencil, paper, and, sometimes, a calculator.

Final Exam

The final exam is comprehensive and counts 20% toward the final grade. The final exam is mandatory.

Resurrection Policy: Your final exam score can replace your lowest exam score. The final exam score can only replace ONE exam score and it cannot replace any other score.

Attendance Policy: Attendance is expected. You are responsible for any notes and assignments that you miss.

Tutoring: The AARC (Academic Assistance and Resource Center) in the Steen Library has free tutoring available! They can be reached at 468 - 4108, or the website http://libweb.sfasu.edu/aarc. The AARC also has walk in tables available.

Learning Team

Learning Team Leader: TBA
Course Calendar / Outline:

- **Descriptive Statistics [CO 1, 2, 3]**
  - Graphical Display of Data
  - Measures of location
  - Measures of Dispersion
  - Approximate time spent: 10%

- **Probability [CO 1, 2, 3]**
  - Classical Probability
  - Probability Laws (Rules)
  - Counting Techniques
  - Approximate time spent: 20%

- **Probability Distributions [CO 1, 2, 3]**
  - Random Variables
  - Discrete Distributions
    - Binomial Distribution
    - Hypergeometric Distribution
  - Continuous Distributions
    - Uniform Distribution
    - Normal Distribution
  - Approximate time spent: 20%

- **Sampling Distributions [CO 1, 2, 3]**
  - Random Samples
  - Central Limit Theorem
  - Approximate time spent: 10%

- **Statistical Inference [CO 1, 2, 3]**
  - Estimation
    - Point Estimation
    - Interval Estimation
  - Hypothesis Testing
  - Approximate time spent: 30%

- **Linear Regression [CO 1, 2, 3]**
  - Approximate time spent: 5%

- 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 limits and continuity, derivatives and antiderivatives, applications of derivatives and definite integration. 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.
  - Approximate time spent: 5%

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.

Student Learning Outcomes (SLO): At the end of MTH 1342, a student who has studied and learned the material should be able to:

1. Exhibit an understanding of basic probability rules and concepts [CO:1,3]
2. Demonstrate an understanding of different probability models and ways they are used in statistical inference. [CO: 1, 2, 3]
3. Demonstrate an understanding of point estimation of population parameters. [PLO: 1,3]
4. Demonstrate an understanding of interval estimation about population parameters and inference that can be drawn from such techniques. [CO: 1,3]
5. Demonstrate an understanding of hypothesis testing concerning population parameters and inference that can be drawn from such techniques. [CO:1,3]
Per SFA policy 5.4, this schedule reflects that there is (1) an amount of student work per credit hour that reasonably approximates not less than one hour of class or direct faculty instruction and two hours of out-of-class student work per week for fifteen weeks over a long semester, 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.

**General Education Core Curriculum**

This course has been selected to be part of Stephen F. Austin State University’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.

By enrolling in Math 1342 you are also enrolling in a Core Curriculum Course that fulfills the Critical Thinking Skills, Communication Skills, or 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 Math 1342 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.

*Include only the core objectives taught in this course and indicate which objectives are being formally assessed in this semester.*

<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>Critical Thinking Skills</td>
<td>To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.</td>
<td>Hypothesis Testing Write Up</td>
<td></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>Hypothesis Testing Write Up</td>
<td></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>Hypothesis Testing Write Up</td>
<td></td>
</tr>
</tbody>
</table>


**Academic Integrity (4.1)**

Please copy and paste the following information regarding Academic Integrity into your syllabus. In addition, you may include your own guidelines for academic integrity as appropriate.

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.

**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/student-academic-dishonesty-4.1.pdf](http://www.sfasu.edu/policies/student-academic-dishonesty-4.1.pdf)

**Withheld Grades Semester Grades 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.

**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/).

**Mental Health and Wellness**

SFA 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:**

**SFA Counseling Services**

[www.sfasu.edu/counselingservices](http://www.sfasu.edu/counselingservices) Rusk Building,
3rd Floor 936.468.2401

**SFA Human Services Counseling Clinic**

[www.sfasu.edu/humanservices/139.asp](http://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
## MTH 220 Tentative Course Calendar

<table>
<thead>
<tr>
<th>#</th>
<th>Week of</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 23rd</td>
<td>Syllabus and Introductory Material</td>
</tr>
<tr>
<td>2</td>
<td>August 30th</td>
<td>Introductory Material</td>
</tr>
<tr>
<td>3</td>
<td>September 6th</td>
<td>Case Study 1A</td>
</tr>
<tr>
<td>4</td>
<td>September 13th</td>
<td>Case Study 1A: Conclusion and Summary</td>
</tr>
<tr>
<td>5</td>
<td>September 20th</td>
<td>Case Study 1B</td>
</tr>
<tr>
<td>6</td>
<td>September 27th</td>
<td>Case Study 1B: Conclusion and summary</td>
</tr>
<tr>
<td>7</td>
<td>October 4th</td>
<td>Case Study 2A</td>
</tr>
<tr>
<td>8</td>
<td>October 11th</td>
<td>Case Study 2A: Conclusion and Summary</td>
</tr>
<tr>
<td>9</td>
<td>October 18th</td>
<td>Case Study 2B</td>
</tr>
<tr>
<td>10</td>
<td>October 25th</td>
<td>Case Study 2B: Conclusion and Summary</td>
</tr>
<tr>
<td>11</td>
<td>November 1st</td>
<td>Start Case Study 3</td>
</tr>
<tr>
<td>12</td>
<td>November 8th</td>
<td>Case 3 Conclusion and Summary</td>
</tr>
<tr>
<td>13</td>
<td>November 15th</td>
<td>Case Study 4 Conclusion and Summary</td>
</tr>
<tr>
<td>14</td>
<td>November 22nd</td>
<td>Thanksgiving Break</td>
</tr>
<tr>
<td>15</td>
<td>November 29th</td>
<td>Review</td>
</tr>
<tr>
<td>16</td>
<td>December 6th</td>
<td>Final Exams</td>
</tr>
</tbody>
</table>

**Final Exams:**
Section .072-Wednesday December 8th 1:00 pm - 3:00 pm
Math 1324 – Finite Mathematics
Course Syllabus

Course description: Mathematical functions and graphs, linear systems of equations, matrices, linear programming, mathematics of finance; applications.

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
   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 MATH 1324 Finite Mathematics 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.
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>Probability Analysis with Matrices</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>Analysis of the Simplex Method in Maximization Applications</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>Exponential and Logarithmic Applications</td>
</tr>
</tbody>
</table>

Course outline:

- Functions [CO: 1,2,3]
  - Linear Functions, including systems of linear equations
  - Quadratic Functions including Maxima and Minima
  - Polynomial Functions
  - Rational Functions
  - Logarithmic Functions and solutions to logarithmic equations
  - Applications (e.g. break-even analysis, supply and demand)
- Mathematics of Finance [CO: 1,2,3]
  - Simple Interest
  - Compound Interest
  - Annuities
    - Ordinary Annuities, Future and Present Value
    - Loans and Amortization
- Matrices and Linear Programming
  - Operations of Matrices
  - Simplex Method
- Probability Analysis
  - Basic Probability
  - Expected Value
  - Probability Analysis with Matrices

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 functions, matrices, linear programming and the mathematics of finance. 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.  

Approximate time spent

- Functions: 35%
- Mathematics of Finance: 15%
- Matrices and Linear Programming: 25%
- Probability Analysis: 20%
- Explicit instruction: 5%
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.

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.

Penalties may include, but are not limited to, reprimand, no credit for the assignment or exam, resubmission of the work, make-up exam, failure of the course, or expulsion from the university.

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 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
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 1324, a student who has studied and learned the material should be able to:
1. Use linear functions and quadratic functions in business applications. [CO: 1,2,3]
2. Use matrices to solve systems of linear equations. [CO: 1,3]
3. Use matrices to solve linear programming problems. [CO: 1,3]
4. Use exponential functions and logarithmic functions and to solve equations using these functions. [CO: 1,2,3]
5. Solve simple interest and compound interest problems including annuities. [CO: 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: 08/09/2021