

MATH 1500 - FINITE MATHEMATICS (MWF)

Instructor:	S. Natvig Hoover	Class & CRN:	MATH 1500-005 (21476)
Email:	shoover1@csustan.edu (note the 1)	Term:	SPRING 2023
Office Hours:	10:00 – 11:00 am MW & By Appt. 113 Science 1	Class Times:	MWF 3:00 – 3:50 PM
		Class Location:	S127

PREREQUISITE:

MATH 1500 is intended for business majors.

Prerequisites: Mathematics Placement category I or II. *Satisfies G.E. area B4.*

COURSE DESCRIPTION:

(3 units) Counting processes, elementary probability, systems of linear equations and inequalities, matrices, linear programming, simplex method, Markov chains, financial mathematics, selected applications.

HYBRID ATTENDANCE AND EXPECTATIONS:

This is a HYBRID course. You are expected to attend in-class discussions at the assigned class time and assigned class days for which you enrolled. If you cannot do so, please drop the class.

Adjustments to the class schedule will not be made in order to accommodate your personal schedule.

- **BE PRESENT:** Attend ALL classes for the entire duration of the course
- **BE RESPONSIBLE;** Complete ALL assignments on time by the due dates, and study
- **BE ENGAGED;** Participate in class and ask questions
- **BE PREPARED;** Spend 2-3 hours preparing, completing homework, and studying

REQUIREMENTS:

Finite Mathematics and Its Applications, Goldstein, Schneider, Siegel, 12th edition, 2018.

ISBN-13 number: 978-0-134-43776-7

Calculator: A scientific calculator with two-line display and edit capability (\approx \$15)

GRADING AND WRITTEN WORK:

Work must be clearly shown and explained in order to justify answers; otherwise, no credit will be given.

ASSIGNMENTS:

*******LATE ASSIGNMENTS ARE NOT ACCEPTED under any circumstances*******

- Assignments are assigned daily and you are expected to complete them by the due date.

UPLOADING WORK ONLINE: (READ CAREFULLY)

ALL assignments and assessments must be submitted, ON TIME by the due date. A PDF file should be created and include all pages & problems. Missing pages/problems, incorrect uploads, etc. will result in no credit. I will not inform you that your upload is missing pages or problems or if you uploaded the incorrect assignment. You take sole responsibility for each upload.

Save all PDF files as: Last name_First name_description (ex. Potter_Harry_3.4 REVIEW WS)

ASSESSMENTS - MASTERY-BASED GRADING (MBG):

- Assessments are scheduled throughout the semester, please be aware of the dates.
- **NO make-up assessments will be given since the assessments are MBG.**
- **NO PHONES, NO APPLE WATCHES, NO INTERNET, NO PEOPLE, ETC. (Calculators allowed)**

On each exam, if your explanations/work indicate that you have mastered the understanding of a problem you earn a “1” on that problem, if you have not shown mastery you earn a “0.” You will have two opportunities, assuming you are present during the exams, to show mastery on each problem. The exception is for any new problems on the final exam for which you will have one opportunity to show mastery.

Exam 1: Problems from topics covered

Exam 2: Exam 1 problems (revised) & problems from new topics covered

Exam 3: Exam 2 problems (revised) & problems from new topics covered

Final Exam: Exam 3 problems (revised) & problems from new topics covered

Once you have “mastered” a problem, you do not complete that problem again. For example, if you mastered problem #3, you won’t complete #3 again, if given the opportunity.

FINAL EXAM & GRADING SCALE:

Final Exam date/time: **MONDAY, MAY 22, 2023; 2:00 – 4:00 PM**

Grading Evaluation:	Grading Scale (+/-):		
15% HOMEWORK	A (100% - 93%)	A- (92%-90%)	
85% <u>ASSESSMENTS</u>	B+ (89% - 87%)	B (86%-83%)	B- (82%-80%)
100% TOTAL	C+ (79% - 77%)	C (76%-73%)	C- (72%-70%)
	D+ (69% - 67%)	D (66%-63%)	D- (62%-60%)
	F (59% and below)		

STUDENT LEARNING OUTCOMES:

Upon successful completion of the course, students should be able to:

- Apply statistical vocabulary and notation appropriately.
- Compute basic probabilities and correctly use computations for application.
- Compute the probability of an event under a variety of different scenarios.
- Build confidence intervals to estimate population parameters such as means and proportions.
- Perform hypothesis tests for population parameters and appropriately interpret the results.

ACADEMIC HONESTY:

Academic honesty is expected AT ALL TIMES in this course. If it *appears* that you’ve cheated on an assessment, you will receive a score of zero for that assessment. I reserve the right to ask you to explain your work if a concern arises. Information concerning the cheating incident will be submitted to the campus office of Judicial Affairs. Refer to your student handbook and to the Appendix (Student Conduct) of the University Catalog for details.

CELL PHONES, COMPUTERS AND CLASSROOM BEHAVIOR:

Cell phones, computers and entertainment devices are disruptive and interfere with the learning environment. Please turn off all electronic devices and put them away during class. You may use your cell phone/computer when uploading your work online, but you may not use it as a resource otherwise.

STUDENTS WITH DISABILITIES:

Upon identifying themselves to the University, students with disabilities will receive necessary accommodations for learning and evaluation. All accommodations must be handled through the Disabilities Resource Services (DRS) office. To contact DRS call (209)667-3159 or email drs@csustan.edu or visit their office in room L150A on the first floor of the Vasche Library.

LEARNING COMMONS

The Learning Commons is your campus resource for learning support. They offer peer-led learning support for a variety of courses through Imbedded Tutors, Supplemental Instruction, Tutoring Center, and Writing Center along with resources, strategies and workshops to build your academic success.

For more information or to schedule an appointment, visit the Learning Commons webpage at <https://www.csustan.edu/learning-commons>.

STUDENTS IN ATHLETICS:

Student athletes are responsible for providing documentation (at the beginning of the semester) listing the days in which they will be absent. Students must make accommodations with me when expecting to be absent during an assessment. No accommodations will be made until I receive the documentation.

SYLLABUS CHANGES:

If changes to this syllabus are necessary, I will announce these changes during class. If you miss a day in which I announce changes, it is your responsibility to obtain the changes from a classmate.

IMPORTANT DATES:

See Schedule of Classes or Academic Calendar for information.

TOPICS COVERED**CHAPTER 1**

- 1.1 Coordinate Systems and Graphs
- 1.2 The Slope of a Straight Line
- 1.3 The Intersection Point of a Pair of Lines

CHAPTER 2

- 2.1 Solving Systems of Linear Equations with Unique Solutions
- 2.2 General Systems of Linear Equations
- 2.3 Arithmetic Operations on Matrices
- 2.4 The Inverse of a Square Matrix
- 2.5 The Gauss-Jordan Method for Calculating Inverses

CHAPTER 3

- 3.1 Linear Inequalities
- 3.2 A Linear Programming Problem
- 3.3 Fundamental Theorem of Linear Programming
- 3.4 Linear Programming

CHAPTER 4

- 4.1 Slack Variables and the Simplex Tableau
- 4.2 The Simplex Method I: Maximum Problems
- 4.3 The Simplex Method II: Minimum Problems
- 4.4 Sensitivity Analysis and Matrix Formulations of Linear Programming Problems

CHAPTER 5

- 5.1 Sets
- 5.2 A Fundamental Principle of Counting
- 5.3 Venn Diagrams and Counting
- 5.4 The Multiplication Principle
- 5.5 Permutations and Combinations
- 5.6 Further Counting Techniques
- 5.7 The Binomial Theorem

CHAPTER 6

- 6.1 Experiments, Outcomes, Samples and Events
- 6.2 Assignment of Probabilities
- 6.3 Calculating Probabilities of Events
- 6.4 Conditional Probability and Independence
- 6.5 Tree Diagrams

CHAPTER 8

- 8.1 The Transition Matrix
- 8.2 Regular Stochastic Matrices

CHAPTER 10

- 10.1 Interest
- 10.2 Annuities
- 10.3 Amortization of Loans
- 10.4 Personal Financial Decisions