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### CLASS TIMES AND LOCATIONS

- Section 512: MWF 9:10 am – 10:00 am in HELD 105

### CATALOG DESCRIPTION

Finite Mathematics (Credits 3) Linear equations and applications; systems of linear equations, matrix algebra and applications, linear programming, probability and applications, statistics. No credit will be given for more than one of Math 140, Math 141, and Math 166. Prerequisites: High school algebra I and II and geometry.

### LEARNING OUTCOMES

This course is focused on quantitative literacy in mathematics found in both business and everyday life. Upon successful completion of this course, students will be able to:

- Logically find relationships among variables to formulate mathematical models for everyday applications, including business applications, such as cost, revenue, profit, supply and demand.
- Understand matrices and their applications, including solving systems of linear equations.
- Construct linear programming problems for various applications and solve using graphical techniques, including finding the optimal point(s) where a company minimizes its cost or maximizes its profit.
- Understand set terminology and its relationship to symbolic notation.
- Use Venn diagrams to model the relationship between sets and set operations, with applications to real-world problems.
- Understand the principles of probability and counting and apply these concepts to a variety of problems, such as finding the number of ways or probability of obtaining particular card hands.
- Identify types of random variables and calculate probabilities and statistics for random variables.
- Apply the concepts of finance to real-world situations, such as financing a car or house.

### CORE OBJECTIVES

#### *Critical Thinking*

- Students will carefully examine and interpret statements to determine equivalent mathematical notation and/or equations.
- Students will think creatively in order to set up a system of equations and solve a word problem.
- Students will analyze given information to set up a linear programming problem, including a system of linear inequalities.
- Students will use inquiry to determine if a solution exists to a linear programming problem.
- Students will examine given information about sets to find the number of elements in particular subsets.
- Students will innovatively use counting techniques (multiplication principle, combinations, permutations) to determine the number of ways a task can be completed and to find the probability the task occurs.
- Students will synthesize information to determine whether or not events are independent.
- Students will differentiate between basic and conditional probability, including knowing when Bayes' Theorem is appropriate.
- Students will evaluate probabilities involving Venn diagrams, tree diagrams, and independent events.
- Students will classify random variables as finite discrete, infinite discrete, or continuous and find all possible values they may assume.
- Students will understand the difference between odds and the probability of an event, and be able to determine one given the other.
- Students will use inquiry to resolve whether or not an experiment is binomial.
- Students will calculate probabilities of binomial and normal random variables.
- Students will understand the difference between simple and compound interest and when to use each.

#### *Communication Skills*

- Students will express mathematical concepts both abstractly with equations and in writing.
- Students will exhibit functions, as well as solutions to linear inequalities, graphically.
- Students will explain why a matrix operation is possible or not, and interpret the meaning of the entries of the resulting matrix when the operation makes sense.
- Students will solve linear programming problems graphically.
- Students will effectively communicate information about sets and experiments using written symbolic notation.
- Students will visually represent sets with Venn diagrams.
- Students will visually display experiments and associated probabilities using tree diagrams.
- Students will communicate statistics through probability distributions and graphically through histograms.
- Students will answer questions during lecture concerning topics discussed in class.

#### *Empirical and Quantitative Skills*

- Students will develop business-related mathematical models from given data, such as cost, revenue, profit, supply, demand, or depreciation.
- Students will create empirical probability distributions based on a given set of data.
- Students will describe numerical data by finding relevant statistics, including expected value, median, mode, standard deviation, and variance.
- Students will use statistics to make informed conclusions about real-world problems, such as determining the premium for an insurance policy.
- Students will use effective interest rates to select the best loan or savings option.
- Students will analyze financial information to make decisions regarding everyday applications, such as loan payments, annuities, amortizations, or sinking funds.



#### INSTRUCTOR INFORMATION

Name	Kari Eifler
Email	keifler[at]tamu[dot]edu (please include 'Math 141' in the subject line)
Office	Blocker 525A
Office Hours	Mondays 10:15 am - 12:00 pm, Thursdays 11:00 am - 12:00 pm
Course Page	<a href="http://www.math.tamu.edu/~keifler/M141.html">http://www.math.tamu.edu/~keifler/M141.html</a>
Phone	Math Department: 979-845-3261 (There is no phone in my office, so email is a better way to reach me.)

#### REQUIRED MATERIALS

**TEXTBOOK:** Finite Mathematics for the Managerial, Life, and Social Sciences, 11th Edition, by Tan

Note: You will be required to purchase access to the online homework system, WebAssign, but doing so will automatically give you access to the eBook. There are a variety of purchasing options available (course specific access or Cengage Unlimited). This access can be purchased through the local bookstores or on WebAssign. Starting on the first day of classes, you will be granted access for a trial period while you determine the appropriate purchasing option for you.

**WEBASSIGN ACCESS:** WebAssign will be used for homework in this class. In order to use WebAssign, you must purchase access. For access purchasing information and options, please visit

<http://www.math.tamu.edu/courses/eHomework/>

**CALCULATOR:** A TI-83, TI-84 (Regular, Plus or Silver edition) or the TI-Nspire (non-CAS version) calculator is **REQUIRED** and you must bring your calculator to each class. If you need to use a calculator other than those listed, it **MUST** not perform symbolic mathematics and **you must have my permission to do so**. I will be demonstrating calculator techniques using the TI-84. You must bring your calculator to every class period. You may not share calculators during exams or quizzes.

**TEXAS A&M STUDENT ID:** Bring your student ID to each class.

#### TENTATIVE COURSE TOPICS AND CALENDAR OF ACTIVITIES

WEEK OF	TOPIC	SECTIONS
1/14	Linear Functions and Models, Intersection of Lines	1.3, 1.4
1/21	Formulating and Solving Systems of Linear Equations	2.1, 2.2, 2.3
1/28	Matrix Arithmetic, Matrix Multiplication, Setting up Linear Programming Problems	2.4, 2.5, 3.2
2/4	Review, <b>EXAM I (1.3, 1.4, 2.1-2.5, 3.2)</b>	
2/11	Graphing Systems of Linear Inequalities, Graphical Solution of Linear Programming Problems (Method of Corners, Leftovers)	3.1, 3.3
2/18	Sets and Set Operations, Venn Diagrams, Multiplication Principle	6.1, 6.2, 6.3
2/25	Multiplication Principle, Permutations, Combinations, Experiments, Sample Spaces and Events	6.4, 7.1
3/4	Review, <b>EXAM II (3.1, 3.3, 6.1-6.4, 7.1)</b>	
3/11	<b>SPRING BREAK</b>	
3/18	Definition and Rules of Probability, Use of Counting Techniques in Probability	7.2, 7.3, 7.4
3/25	Conditional Probability, Independent Events, Bayes' Theorem	7.5, 7.6
4/1	Random Variables, Expected Value, Variance, Standard Deviation, Binomial Distribution	8.1, 8.2, 8.3, 8.4
4/8	Review, <b>EXAM III (7.2-7.6, 8.1-8.4)</b>	
4/15	Normal Distribution and Its Applications	8.5, 8.6
4/22	Simple and Compound Interest, Annuities, Amortization	5.1, 5.2, 5.3
4/29	Review for Final Exam, Final Exams	
5/3	Final Exam	



### GRADING POLICIES

The course grading will be based on the tables below. At the end of the semester you will receive the grade you *earned*, according to the scale given. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please come see me in person.

GRADE BREAKDOWN

Activity	Date	Percentage
Homework	Weekly	7%
Quizzes	Weekly	17%
Exam I (1.3, 1.4, 2.1-2.5, 3.2)	2/8/19	17%
Exam II (3.1, 3.3, 6.1-6.4, 7.1)	3/8/19	17%
Exam III (7.2-7.6, 8.1-8.4)	4/12/19	17%
Final Exam	See below	25%
TOTAL		100%

GRADING SCALE

Range	Grade
$90 \leq \text{Average} \leq 100$	A
$80 \leq \text{Average} < 90$	B
$70 \leq \text{Average} < 80$	C
$60 \leq \text{Average} < 70$	D
Average < 60	F

GRADE APPEAL POLICY: Any questions concerning the grading of an exam or quiz must be presented to me within one week of the return of the assignment. Otherwise the grade will not be changed. I will be posting grades during the semester on e-campus. Please go to <http://ecampus.tamu.edu> to login.

### QUIZZES

There will be a number of in class and take home quizzes, both announced and unannounced.

### HOMEWORK

There will be a graded computer homework assignment for each section we cover in-class. These assignments will be taken on the WebAssign computer system. For more information about purchasing access and to login please go to <http://www.math.tamu.edu/courses/eHomework>.

### EXAMS

There will be three in class exams during the semester. You must bring your student id and approved calculator. Calculators will be checked before each exam. If there are any programs, notes, or formulas on your calculator which I did not give you, the occurrence will be considered scholastic dishonesty. The tentative exam schedule is as follows:

**Exam I:** Friday, February 8, 2019

**Exam II:** Friday, March 8, 2019

**Exam III:** Friday, April 12, 2019

### FINAL EXAM

The final exam will be **comprehensive** and is **required** for all students. If your final exam grade is higher than your lowest test grade, the grade on your final will replace that test grade in the final grade calculation.

The final exam schedule is as follows:

Section	Class Time	Final Exam Date, Time, and Location
141-512	9:10 am – 10:00 am	May 3, 2019, 8:00 am – 10:00 am in HELD 105

(You can refer to <http://registrar.tamu.edu/Courses.-Registration.-Scheduling/Final-Examination-Schedules> for the University final exam schedule.)



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### ATTENDANCE AND MAKE-UP POLICIES

Attendance is essential to complete this course successfully.

- **Excused Absences:** University student rules concerning excused and unexcused absences, as well as makeups, can be found at <http://student-rules.tamu.edu/rule07>. In particular, make-up exams and quizzes or late homework will NOT be allowed unless a **University approved reason is given to me in writing**. Notification *before* the absence is **required** when possible. Otherwise (e.g. accident, or emergency), you must notify me **within 2 working days** of the missed exam, quiz, or assignment to arrange a makeup. In all cases where an exam/quiz/assignment is missed due to an injury or illness, whether it be more or less than 3 days, **I require a doctor's note**. I will not accept the "University Explanatory Statement for Absence from Class" form. Further, an absence due to a non-acute medical service or appointment (such as a regular checkup) is *not* an excused absence.
- If you have a University approved absence for missing an exam, you will be expected to make up your exam according to the Department Make-up Schedule that can be found at <http://www.math.tamu.edu/courses/makeupexams.html>, starting with the first option for each exam. Only if you have a University approved absence for the day of the exam and the previous makeup day will you be allowed to use the later options or have other arrangements made. You must discuss (email is fine) the need for a make-up exam with me before going to a scheduled time.

### ACADEMIC INTEGRITY

*"An Aggie does not lie, cheat, or steal, or tolerate those who do."*

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit <http://aggiehonor.tamu.edu/>.

### AMERICANS WITH DISABILITIES ACT (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services Building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.

If you require accommodations, please see me as soon as possible so that we can make sure you have the necessary paperwork in order.

### ADDITIONAL CLASS POLICIES

#### ELECTRONIC DEVICES POLICY

- Cell phones must be turned off and out of sight during class. If I hear or see your cell phone, I may ask you to leave class (this is in accordance with *University Student Rules*).
- Calculators are allowed to be on during class while being used for math. You should always have your calculator out and ready to use by the time class starts. On exam days, your calculator's memory must be RESET completely.

#### EMAIL POLICY

Check your official TAMU email account EVERY day. You are responsible for any information I send via email. Also, because of privacy rights, I cannot discuss grades via email. Also, please include your full name, course number (142), and section number in your email. If any of this information is missing, it will delay my response.



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**ADDITIONAL HELP & PREPARING FOR EXAMS**

**HELP SESSIONS**

Help sessions are an opportunity for you to ask questions and get help with your homework. These sessions are led by students, where you may come and go, as your schedule allows. Once determined, the schedule will be announced in class, posted on our course webpage, and additionally posted here:

<http://www.math.tamu.edu/courses/helpsessions.html>

**OFFICE HOURS**

I will have office hours to help with homework problems or concepts learned in class. They are drop-in hours where you can get help with problems from class or talk to me. You do not need to make an appointment for these.

**SUGGESTED HOMEWORK PROBLEMS**

These problems will not be collected for a grade, but it is **IMPERATIVE** that you do the assigned problems on the suggested homework problems list to prepare for the exams. The best way to learn anything (including math!) is to practice it. If you need help with any of these suggested homework problems, please attend office hours or a Math 142 Help Session. The suggested homework problems can be found here:

[http://www.math.tamu.edu/courses/math141/141suggested\\_homework.pdf](http://www.math.tamu.edu/courses/math141/141suggested_homework.pdf)

**YOUR CLASSMATES**

You are encouraged to work together and study together, but you must turn in your own assignments. Copying answers is an act of scholastic dishonesty and will **NOT** be tolerated.