

SYLLABUS

COURSE INFORMATION

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| Course Number: | MATH 140 |
| Course Title: | Mathematics for Business and Social Sciences |
| Section: | 515 |
| Time: | MWF 10:40 am – 11:30 am |
| Location: | MSC 2400 (and over Zoom, see Canvas for the link) |
| Credit Hours: | 3 |
| Course Page: | www.math.tamu.edu/courses/math140/ |

INSTRUCTOR DETAILS

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|---------------|--|
| Instructor: | Tanuj Gupta |
| Office: | Blocker 340 |
| Phone: | Math Department: 979-845-3261 (<i>There is no phone in my office; email is the best method of correspondence.</i>) |
| E-Mail: | tanujgupta17@tamu.edu |
| Office Hours: | MWR 3:00 pm – 4:00 pm and by appointment. Check Canvas for the Zoom link. |
| Web Page: | www.math.tamu.edu/~tanujgupta17 |

COURSE DESCRIPTION

MATH 140 Mathematics for Business and Social Sciences (MATH 1324), Credits 3. 3 Lecture Hours: Application of common algebraic functions, including polynomial, exponential, logarithmic and rational, to problems in business, economics and the social sciences; includes mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices; linear programming; and probability, including expected value. Only one of the following will satisfy the requirements for a degree: Math 140 and Math 168.

COURSE PREREQUISITES

Prerequisite: High school Algebra II and Geometry.

SPECIAL COURSE DESIGNATION

This is a CORE curriculum course in Mathematics equivalent to MATH 1324.

COURSE LEARNING OUTCOMES

Upon successful completion of this course, students will:

- Apply elementary functions, including linear, quadratic, polynomial, rational, logarithmic, and exponential functions to model and solve real-world problems.
- Solve mathematics of finance problems, including the computation of interest, annuities, and amortization of loans.
- Apply basic matrix operations, including linear programming methods, to solve application problems.
- Demonstrate fundamental probability techniques and application of those techniques, including expected value, to solve problems.
- Apply matrix skills and probability analyses to model applications to solve real-world problems.

CORE OBJECTIVES**CRITICAL THINKING**

- Students will carefully examine and interpret statements to determine equivalent mathematical notation and/or equations.
- Students will think logically 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 understand how to determine the probability of an event and apply this to real-world applications.
- 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 and with matrices.
- 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 use statistics (expected value) to make informed conclusions about real-world problems, such as determining the premium for an insurance policy.
- Students will use data on business resources and constraints to set up and solve linear programming problems.
- Students will analyze financial information to make decisions regarding everyday applications, such as loan payments, annuities, amortizations, or sinking funds.

TEXTBOOK AND/OR RESOURCE MATERIALS

TEXTBOOK: *Mathematics for Business and Social Sciences* by Kathryn Bollinger and Vanessa Coffelt

You can access this book for free from <https://oaktrust.library.tamu.edu/handle/1969.1/188687>.

EDFINITY ACCESS: Edfinity will be used for homework in this class. To use Edfinity, you must purchase access. For access purchasing information and options, please visit

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

CALCULATOR: A TI-83 (any version), TI-84 (any version) or the TI-Nspire (non-CAS version) calculator is **REQUIRED** and you must bring your calculator to each class period/exam. 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**. You may not share calculators during exams or quizzes.

OTHER TECHNOLOGY: You will need a computer that meets TAMU's Bring Your Own Device policy, and you will need to bring it to class with you. You will need to scan and upload written work as a PDF (this can be achieved with a cell phone or other technology). To reduce the spread of COVID-19 and to ensure a uniform testing environment for all students, all in-class individual assessments (quizzes and exams) will

be done electronically in Canvas and proctored online over Zoom. To do this, the following technical requirements are needed:

- Appropriate hardware (laptop or desktop computer, a second device such as a mobile phone, high-speed internet connection)
- Appropriate software (PDF reader, Zoom on phone and computer, the latest update on an internet browser- Chrome or Firefox are recommended)

During exams, you might be asked to join a zoom meeting using two separate devices (for eg: computer, laptop, tablet, or phone). This is needed for online proctoring. More information will be provided on Canvas before the exams.

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

GRADING POLICY

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 schedule an individual Zoom meeting with me and bring your TAMU ID.

GRADE BREAKDOWN

| Activity | Date | Percentage |
|-----------------------|----------|-------------|
| Edfinity Homework | Weekly | 10% |
| Quizzes and Classwork | Weekly | 25% |
| Exam I | 09/11/20 | 15% |
| Exam II | 10/09/20 | 15% |
| Exam III | 11/13/20 | 15% |
| Final Exam | 12/08/20 | 20% |
| TOTAL | | 100% |

| 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 |

APPEAL POLICY

Students have one week upon the return of individual grades to notify the instructor of any inaccuracies in their graded work. Students should bring all grade disputes to their instructor in an individual Zoom meeting. Due to FERPA privacy issues, grade disputes will not be discussed over email or in the classroom.

EDFINITY HOMEWORK

Online Homework will be completed on Edfinity. **When you create your Edfinity account, you must use your official TAMU email address, name as it is listed in HOWDY, and your UIN.** Important information such as how to log in, how to access and take assignments, how to purchase access, and the Student Help Request Form can be found at <http://www.math.tamu.edu/courses/eHomework/>.

Do not wait until the last minute to complete your online homework as last-minute technical difficulties will not be an excuse for missing a deadline.

QUIZZES AND CLASSWORK

These will be assignments completed during class time and may include, but not limited to, unannounced or announced individual closed-book quizzes, collaborative assessments, individual open-book activities.

EXAMS

There will be three proctored exams administered during published class times. The exams will be a combination of multiple choice and work-out. Approved calculators are the only electronic devices allowed - no cellphones or other electronic devices are allowed (other than for proctoring purposes). Be prepared to reset the memory (not just the RAM) of your calculator for the proctor before each exam. You will need to have your ID available at each exam. The exams will be proctored through Zoom. During each exam, you will be required to set up a streaming video camera (cell phone or USB webcam) in such a way that the proctor will be able to view your workspace during the exam. The proctoring sessions may be recorded. To receive credit for this course, you must consent to be proctored in this manner. The tentative exam schedule is as follows:

Exam I: Friday, Sep. 11, 2020

Exam II: Friday, Oct 9, 2020

Exam III: Friday, Nov 13, 2020

FINAL EXAM

The final exam will be comprehensive and is required for all students. You will need to bring your ID to your final exam. 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 will be held on **December 08 from 11:00 am – 1:30 pm**. (You can refer to <http://registrar.tamu.edu/Courses,-Registration,-Scheduling/Final-Examination-Schedules> for the University final exam schedule.)

ZOOM ETIQUETTE

When joining class remotely via ZOOM, please join with your audio off. While the "CHAT" feature will not be enabled during class sessions, you may ask questions by either using the "raise your hand" feature and waiting for me to call on you, or by just unmuting yourself and asking your question aloud when I ask if the class has any questions.

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>. 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 two business days** of the missed exam, quiz, or assignment to arrange a makeup.
- **For Fall 2020 only, students may use the Explanatory Statement for Absence from Class form in lieu of a medical confirmation. Students must submit the Explanatory Statement for Absence from Class within two business days after the last date of absence.**
- **Internet Problems:** If you experience internet connection issues during class time, please contact me as soon as possible to discuss the material you missed.
- **Makeup exams** will only be allowed due to excused absences and the makeup must be taken as soon as possible after the missed exam. You will need to schedule to make up your exam within 3 business days of the originally scheduled time to allow for grades to be returned in a timely manner. If you know ahead of time you will be absent during an exam, you must notify me in advance.

LATE WORK POLICY

Late work will NOT be accepted unless you have a University approved reason and contact me within 2 working days of the missed assignment.

COURSE SCHEDULE

| WEEK | TOPIC | SECTIONS |
|-----------------------------------|--|----------------------|
| 1: Week of Aug 17 | Introduction to the course Basic Matrix Operations | Introduction 1.1 |
| 2: Week of Aug 24 | Matrix Multiplication Review of Lines | 1.2 2.1 |
| 3: Week of Aug 31 | Modeling with Linear Functions Systems of Two Equations in Two Unknowns Setting up and Solving Systems of Linear Equations | 2.2 2.3 2.4 |
| 4: Week of Sep 7 | More on Setting up and Solving Systems of Equations EXAM 1 - September 11 | 2.4 Exam 1 |
| 5: Week of Sep 14 | Setting up Linear Programming Problems Graphing Systems of Linear Inequalities in Two Variables Graphical Solutions of Linear Programming Problems | 3.1 3.2 3.3 |
| 6: Week of Sep 21 | More on Graphical Solution of Linear Programming Problems Simplex Method | 3.3 3.4 |
| 7: Week of Sep 28 | Mathematical Experiments Basics of Probability Rules of Probability | 4.1 4.2 4.3 |
| 8: Week of Oct 5 | Probability Distributions and Expected Value EXAM 2 - October 9 | 4.4 Exam 2 |
| 9: Week of Oct 12 | Relations and Functions Polynomial Functions | 5.1 5.2 |
| 10: Week of Oct 19 | Rational Functions Power and Radical Functions Piecewise-Defined Functions | 5.3 5.4 5.5 |
| 11: Week of Oct 26 | More on Piecewise-Defined Functions Exponential Functions | 5.5 5.6 |
| 12: Week of Nov 2 | Combining and Transforming Functions Inverse Functions and Logarithms | 5.7 5.8 |
| 13: Week of Nov 9 | More on Inverse Functions and Logarithmic Functions Exam 3 - November 13 | 5.8 Exam 3 |
| 14: Week of Nov 16 | Interest and Effective Rates Annuities, Sinking Funds and Amortization | 6.1 6.2 |
| 15: Week of Nov 23 | More on Annuities, Sinking Funds and Amortization Thanksgiving Holiday (Thursday and Friday) | 6.2 |
| 16/17: Weeks of Nov 30 & Dec 7 | Final Exam: December 8, 2020, 11:00 am | |

OTHER COURSE INFORMATION

TECHNOLOGY SUPPORT

As much of our learning experience relies on technology, many students can get overwhelmed when something goes wrong, or things get overwhelming. If you're looking for a curation of online learning resources, consider checking out <https://keeplearning.tamu.edu/>

If your need is specific to a course-related technology issue, consider seeking help from the 24/7 TAMU IT Help Desk. <https://it.tamu.edu/help/>

LEARNING RESOURCES

Week-in-Review (WIR)

There will be Week-in-Review sessions starting the second week of classes. Each review is open to all Math 140 students to review the topics of the previous week and to provide additional examples. The schedule and problem sets that will be worked during these sessions can be found at <http://mlc.tamu.edu/Online-Help-Services>

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 posted at <http://mlc.tamu.edu/Online-Help-Services>

ACADEMIC INTEGRITY

You will read more about the Academic Integrity Statement and Policy in the University Policies section. It is VERY important to me that you abide by that policy: "An Aggie does not lie, cheat or steal, or tolerate those who do." If you have any questions about whether something would be considered cheating, ask me before you do it. However, here is some general guidance.

- In this course, I encourage you to discuss homework assignments and their solutions with your classmates. Study groups are a great way to learn. However, it is NOT permissible to copy homework solutions from another student. Make sure that you understand and could rework anything that you submit for a grade.
- It is NOT permissible to communicate about any aspect of any quiz or exam until ALL students have completed the quiz or exam. The penalties for violating this policy could include an F on an assignment, exam, or the entire course.

COPYRIGHT OF MATERIALS

All class materials (notes, tests, assignments, videos, etc.) are copyrighted and may not be copied, posted, or reproduced without permission.

UNIVERSITY POLICIES

ATTENDANCE POLICY

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

MAKEUP WORK POLICY

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

ACADEMIC INTEGRITY STATEMENT AND POLICY

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

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" ([Section 20.1.2.3, Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

AMERICANS WITH DISABILITIES ACT (ADA) POLICY

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

TITLE IX AND STATEMENT ON LIMITS TO CONFIDENTIALITY

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.

- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University’s goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](#) (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University’s [Title IX webpage](#).

STATEMENT ON MENTAL HEALTH AND WELLNESS

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student’s academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at [suicidepreventionlifeline.org](#).

CAMPUS SAFETY MEASURES

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices for the Fall 2020 academic term to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- Self-monitoring—Students should follow CDC recommendations for self-monitoring. **Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction.**
- Face Coverings—[Face coverings](#) (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the [Face Covering policy](#) and [Frequently Asked Questions \(FAQ\)](#) available on the [Provost website](#).
- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- To attend a face-to-face class, students must wear a face covering (or a face shield if they have an exemption letter). If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the [Student Conduct office](#) for sanctions. Additionally, the faculty member may choose to teach that day’s class remotely for all students.

PERSONAL ILLNESS AND QUARANTINE

Students required to quarantine must participate in courses and course-related activities remotely and **must not attend face-to-face course activities**. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence (See [Student Rule 7, Section 7.2.2.](#)) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7. While Student Rule 7, Section 7.3.2.1, indicates a medical confirmation note from the student's medical provider is preferred, **for Fall 2020 only, students may use the Explanatory Statement for Absence from Class form in lieu of a medical confirmation. Students must submit the Explanatory Statement for Absence from Class within two business days after the last date of absence.**

OPERATIONAL DETAILS FOR FALL 2020 COURSES

For additional information, please review the [FAQ](#) on Fall 2020 courses at Texas A&M University.