Math 141 – Business Mathematics I
Texas A&M University

Catalog Description: Math 141: Business Mathematics I (Credit 3) Linear and quadratic equations and applications; functions and graphs, systems of linear equations, matrix algebra and applications, linear programming, probability and applications, statistics.
Prerequisites: High school algebra I and II and geometry. Credit will not be given for more than one of MATH 141 and 166.

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: Kathryn Bollinger
E-mail: bollinger141@math.tamu.edu
(Please include your full name and section color in any
e-mail you send to me.)

Web Page: http://www.math.tamu.edu/~bollinger
(Check regularly for announcements and important information,
as well as for notes, a daily schedule and other helpful links.)

Class Times & Locations: TBA

Required Materials:

- Textbook: Finite Mathematics for the Managerial, Life, and Social Sciences, 10th Ed. by Tan
  - You paid for an electronic book version of the text when you paid your fees for this course.
  - Information on how to access your ebook can be found under the “Student Information Page” at
    http://www.math.tamu.edu/courses/eHomework/ Look under the Math 141 link.
  - If you would like a hard bound or loose-leaf copy of the textbook you may buy one, but it is not required.

- 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 want to use a calculator other than those
  listed, it may NOT perform symbolic mathematics and you must have my permission to do so. Calculators are
  allowed on exams but you must clear and reset the memory before each exam. You may not share calculators during
  exams or quizzes. I will consider any illegal use of calculators on exams or quizzes as academic dishonesty and
  report it to the Aggie Honor Council. (Refer to the Academic Integrity Statement on pg. 5)

- Texas A&M Student ID: You must bring your student ID to each class.

Grading:

<table>
<thead>
<tr>
<th>Grade Weights</th>
<th>Required Averages</th>
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<tbody>
<tr>
<td>In-Class Daily Assignment Average</td>
<td>5%</td>
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<tr>
<td>(details on pg. 3)</td>
<td>90 ≤ A ≤ 100%</td>
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<tr>
<td>Homework Problem Set Average</td>
<td>10%</td>
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<tr>
<td>(details on pg. 3)</td>
<td>80 ≤ B &lt; 90%</td>
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<tr>
<td>Quiz Average</td>
<td>15%</td>
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<td>(details on pg. 3)</td>
<td>70 ≤ C &lt; 80%</td>
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<tr>
<td>Three In-Class Exams</td>
<td>15% each</td>
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<td>(details on pg. 1 &amp; 3)</td>
<td>60 ≤ D &lt; 70%</td>
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<tr>
<td>Cumulative Final Exam</td>
<td>25%</td>
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<td>(details on pg. 1 &amp; 3)</td>
<td>0 ≤ F &lt; 60%</td>
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**At the end of the semester, you will receive the grade you earned, according to the distribution above.**

Tentative Exam Schedule:

Exam I  Sections 1.3-1.4, Quadratics, 2.1-2.5  Week of September 16th-20th
Exam II Sections 3.1-3.3, 6.1-6.4, 7.1  Week of October 14th-18th
Exam III Sections 7.2-7.6, 8.1-8.4  Week of November 11th-13th

FINAL EXAM Schedule: TBA
See http://registrar.tamu.edu/General/FinalSchedule.aspx for the complete final exam schedule.
A tentative day-by-day semester schedule can be found on the course web page with an abbreviated version below.

<table>
<thead>
<tr>
<th>Tentative Schedule: All changes will be announced in class.</th>
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<tr>
<td><strong>Week 1</strong></td>
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<td><strong>Week 15</strong></td>
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<tr>
<td><strong>Finals</strong></td>
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In-Class Daily Assignments (ICAs):
At various times throughout the semester, you will be given assignments (that are not homework problems or quizzes) which must be completed before leaving class. In order to complete the ICAs you will need to have loose-leaf notebook paper and something to write with (a pencil or pen with blue or black ink). Always come to class with these materials. Many times the ICAs will be due within the first five minutes of class, so it is imperative that you arrive to class prepared and on time each day. Other times the ICAs may be given at the end of class, so it is also imperative that you do not leave class early. None of the grades on these assignments may be dropped unless you are missing a grade due to a verified University excused absence.

Homework Problem Sets:
Graded
Graded homework sets will be primarily online, but may include an occasional written assignment.

Online Homework Problem Sets
- All online homework problem sets will be based in the online system WebAssign. Everything you will need to know about logging into your account is available at http://www.math.tamu.edu/courses/eHomework/. Please visit this site for help with technical difficulties, announcements, and more information. I suggest you bookmark this page and visit it before you login to WebAssign each time.
- Be sure to start each assignment well in advance of the due date.
- You should use Mozilla Firefox and have the most updated versions of Java and Flash on the computer you are using to alleviate technical problems.
- If you ever have technical issues with WebAssign, please fill out a Student Help Request Form found at http://www.math.tamu.edu/courses/eHomework/.
- I will not give extensions or grade adjustments due to technical difficulties at the last minute.

Written Homework
Each collected written homework assignment must contain your NAME, SECTION COLOR, and SEAT # in the top right hand corner of the front page and all subsequent pages must be STAPLED to the first page. All of your work must be shown and it must be neat and legible, with all answers clearly marked. You should use pencil, but if you choose to use pen, then you should use a pen with blue or black ink. Failure to follow these instructions may result in a grade of zero.

Late Work
Written assignments are due at the beginning of the class period before I have started collecting papers. If you arrive after I have started collecting papers, but before I have finished picking them up, then a 20% late penalty will be imposed. Once I have finished collecting papers, your assignment may not be accepted at all. No extensions on online homework problem sets will be granted without a verified University excused absence.

Non-Graded
Math cannot be learned by watching someone else do math; it requires working lots of practice problems. In addition to graded homework, I STRONGLY recommend that you keep a notebook in which you work the problems from the suggested homework list for the textbook, found on our course webpage after a topic is covered in class, but before trying the graded homework. There are also “Practice” problem sets in WebAssign which are not for a grade, but each will be of help when trying to complete the corresponding graded “Homework” problem set.

It is imperative that you work many different problems in order to help you be fully prepared for quizzes and exams.

Quizzes:
You can expect to be given a mixture of in-class, take-home, announced and unannounced quizzes throughout the semester. Quizzes may be given at any time during class, so make sure you arrive on time to each class and do not leave class early. You will be expected to show all of your work, including calculator methods, on all problems for full credit, unless it is stated otherwise.

Exams:
There will be three in-class exams. You will be expected to show all of your work, including calculator methods, on all problems for full credit, unless it is stated otherwise.

Final Exam:
The in-class final exam is COMPREHENSIVE. The presence of material on the final is roughly proportionate to the amount of time we spend on that material during the semester.
Additional Help & Preparing for Exams:

- *Me:* I am here to help you but I can’t help if I don’t know there is a problem. I encourage each of you to talk to me, ask questions both in and out of class, come to office hours, send emails, etc. Your best bet for success is active participation!

- *Class Notes:* An outline of notes will be posted before class each day. It will be beneficial to print these out and bring them with you to class. You should review your notes after class, and make sure to get any questions you have about the material in the notes answered, before the next class meeting, if possible. A completed set of notes will NOT be posted after class (with the exception of the Prerequisite Information material). You should also review your notes when working on homework or when preparing for exams.

- *TAs:* Each of my classes will have a teaching assistant. These teaching assistants will be offering additional help at times outside of my office hours and other provided help hours. Times and places for these additional hours of help will be posted on our course webpage and will be announced in class, once they are determined.

- *Your Classmates:* Get to know your classmates. Form study groups and work on suggested problems outside of class.

- *Week-in-Review (WIR):* There are Week-in-Review sessions conducted by instructors each week. Each review is open to all Math 141 students to review the topics of the previous week and to provide additional examples. The days, times and places of these reviews will be posted on our course webpage and will be announced in class, once they are determined. Additionally, this information can be found at [http://www.math.tamu.edu/courses/weekinreview.html](http://www.math.tamu.edu/courses/weekinreview.html).

Additional sets of old Week-in-Review questions with solutions are linked from our course webpage.

- *Practice:* In order to succeed in this course, it is essential that YOU practice extra problems ON YOUR OWN. See the suggested homework list for the textbook and additional problem sets linked from our course webpage. Even if you are not able to attend either WIR, you can still use the provided problems for practice. If you regularly attend a particular WIR, it might be a good idea to work through the problems from the other WIR, on your own, for additional practice.

- *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 at [http://www.math.tamu.edu/courses/helpsessions.html](http://www.math.tamu.edu/courses/helpsessions.html).

- *Video Resources:* In WebAssign, under the Announcements section, there is a link to resource videos for the topics covered in this class.

- *Calculator Help:* Step-by-step written keystroke directions are available for all the calculator functions in the course on our course webpage.

Policies:

You are responsible for checking your TAMU e-mail account and the announcements on our course webpage DAILY.

*Attendance*

Attendance is essential in this class. By attendance, I mean arriving to class on time, ready to actively participate throughout the entire class time, and not leaving early. Attendance will be used in conjunction with your final exam grade as a consideration in the case of borderline grades.

*Grade Disputes*

If you disagree with any deduction taken on an assignment or exam handed back in class, you must bring it to my attention within two working days of it being returned to be re-graded. Due to privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please come see me in person.

*Late Work*

All assignments due in class are due at the beginning of the class period before I have started collecting papers. If you arrive after I have started collecting papers, but before I have finished picking them up, then a 20% late penalty will be imposed. Once I have finished collecting papers, your assignment may not be accepted at all. No extensions on online homework problem sets will be granted without a verified University excused absence.

*Copyright*

All exams, printed handouts and/or assignments, and web-materials are protected by U.S. Copyright Laws. No multiple copies can be made without my written permission. No exams or assignments may be shared with anyone outside of the class or posted on any website.
Scholastic Dishonesty

- **An Aggie does not lie, cheat, or steal, or tolerate those who do!**
  
  *(You are an Aggie, and so am I! The Aggie Code of Honor will be enforced.)*
  
- Students are encouraged to study together, unless otherwise directed, but all work intended for a grade must clearly be your work as an individual. All exams and quizzes (whether in class, online, or take-home) are to be taken individually.
  
- 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 excuse any member of the TAMU community from the requirements or the processes of the Honor System. For additional information on the Honor Council Rules and Procedures, consult [http://www.tamu.edu/aggiehonor/](http://www.tamu.edu/aggiehonor/).
  
- **Note:** It is considered CHEATING to have notes, formulas, or programs in your calculator. It is also considered Academic Dishonesty to provide falsified documentation in order to obtain an excused absence.

Make-up Policy

No make-ups will be given without written evidence of an official University excused absence. *(See University Student Rules.) According to Section 7.3 of the University Student Rules, for an absence to be considered excused, “the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class.” In addition (and also in accordance with University Student Rules), a written excuse must be presented upon return to class. Specifically, in the case of illness too severe or contagious to attend class or in the case of injury, students are required to obtain a confirmation note from a health care professional affirming date and time of a medical office visit regarding the illness or injury and confirming the need of the absence (with permission to verify) before a make-up will be given. The Texas A&M University Explanatory Statement for Absence will NOT be accepted. An absence for a non-acute medical service does not constitute an excused absence. Students with an official University excused absence are permitted to make up work only for the dates of the absence.

It is the student’s responsibility to contact me within the proper time period, in order to schedule make-up assignments.

If class is officially cancelled for any reason, you can expect that the assignments due/taken on the missed class day will be due/taken the next time the class meets.

Disability Services

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, in Cain Hall, Room B118 or call 845-1637.

For additional information visit [http://disability.tamu.edu](http://disability.tamu.edu).

Classroom Etiquette Policies

**Electronic Device Policy:** Unless given permission otherwise by me, all electronic devices must be **TURNED OFF AND PUT AWAY WHILE YOU ARE IN THE CLASSROOM!**

This means the following...

- You should never have a cell phone out or turned on in the classroom -- before, during, or after class (unless you specifically have been given permission from me before class). If I hear or see your cell phone out in the classroom, I may ask you to leave class. If you are asked to leave the classroom, you will not be allowed to complete any assignments taken for a grade during the remainder of that class.

  If I see your cell phone out in the classroom (whether turned on or not) **WHILE** a grade is being taken (ICA, quiz, or exam), you will receive a ZERO on the assignment and you will be asked to leave the classroom.

- 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, you are not allowed to have your calculator lid out and your calculator memory must be **RESET** before entering the classroom.

- You are not allowed to have any other electronic device (computer, ipod, etc.) out or turned on while in the classroom (unless you specifically have been given permission from me before class).

**Courtesy & Respect:** During class I will stay focused on teaching you mathematics, so please stay focused on **learning** the mathematics being taught. This means you should arrive to class on time, you should stay awake throughout class, you should not be reading a newspaper or working with materials from another course, you should refrain from discussion not related to class, and you should not leave class early (unless there is an emergency or you have talked to me before class). If I feel you are being disruptive or disrespectful during class, you may be asked to leave the room.