Course Syllabus – Mathematics for Business and Social Sciences

MATH 1324.008 – Fall 2018

Department: Mathematics and Engineering

Discipline: Mathematics

Course Number: Math 1324

Course Title: Math for Bus and Social Sciences

Credit: 3 **Lecture:** 3 **Lab:** 1

Instructor: Denise Johansen

Office: RC 223D; (806)716-4632

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Time/Place: TR 9am-10:45am/RC 232

Reese Campus Office Hours: MTWR 11am-12pm, TR 6pm-7pm, F 9am-12pm, or by appointment

This course satisfies a core curriculum requirement: Yes – mathematics

Prerequisites: 2 years of high school algebra or Math 0320, TSI compliance

Course Description: The application of common algebraic functions, including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. The applications include mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices, linear programming; and probability, including expected value.

Course Purpose/Rationale/Goal: The purpose/rationale of the course is to introduce students to the fundamental principles in business mathematics including functions, systems of equations, linear programming, and financial math and to prepare students to study Business Calculus.

Student Learning Outcomes/Competencies:
Upon completion of this course and receiving a passing grade, the student will be able to:
1. Apply elementary functions, including linear, quadratic, polynomial, rational, logarithmic, and exponential functions to solving real-world problems. (CH 3, 4)
2. Solve mathematics of finance problems, including the computation of interest, annuities, and amortization of loans. (CH 5)

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3. Apply basic matrix operations, including linear programming methods, to solve application problems. (CH 6, 7)
4. Demonstrate fundamental probability techniques and application of those techniques, including expected value, to solve problems. (8.3, 8.4, 9.1)
5. Apply matrix skills and probability analyses to model applications to solve real-world problems. (CH 6, 7)

Core Objectives:

Communication Skills:
effective development, interpretation, and expression of ideas through written, oral, and visual communication.

- Develop, interpret, and express ideas through written communication
- Develop, interpret, and express ideas through oral communication
- Develop, interpret, and express ideas through visual communication

Critical Thinking:
creative thinking, innovation, inquiry, analysis, evaluation, and synthesis of information.

- Generate and communicate ideas by combining, changing, and reapplying existing information
- Gather and assess information relevant to a question
- Analyze, evaluate, and synthesize information

Empirical and Quantitative Competency Skills:
the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

- Manipulate and analyze numerical data and arrive at an informed conclusion
- Manipulate and analyze observable facts and arrive at an informed conclusion

Physical Textbook (Optional): Mathematics with Applications in the Management, Natural, and Social Sciences, Lial, Hungerford, Holcomb, and Mullins, 12th ed . Pearson Publishing.

Supplies (Required): graphing calculator (TI 83/84 recommended; TI 89/92/N-Spire or your phone are NOT allowed), MyMathLab access code (Course ID: **johansen83356**).

Technology Required:
Working, reliable internet access
MyMathLab website. Login at MyMathLab.com

Course Requirements: To maximize the potential to complete this course, a student should attend all class meetings, take notes and participate in class, login to MyMathLab at least 3 times a week, read the required textbook sections, watch the required lecture videos,

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thoroughly complete all homework assignments, and prepare well for examinations including final examinations.

Contacting Your Instructor: I am available by phone or face-to-face visit in my office on the Reese campus during my posted office hours; you can email me at any time. I can also be reached by phone or text using my cellphone number (513-227-0095) during reasonable hours. If you have to leave a message, my response time is 1 business day or less.

Learning Materials/Activities: To be successful in this course, you will use the following materials and complete the given activities for each section of the textbook that we will cover.

- Textbook reading – Read the section in your textbook, whether you use a physical book or the eText inside MyMathLab. As you read, you should write notes on any new vocabulary words (usually in boldface type), formulas, theorems, and calculator commands. The reading may be your first introduction to the concepts.
- Explore assignment - Explore assignments for each section will be posted in MyMathLab under the Assignments button and will contain video lectures and vocabulary/concept check questions. As you view the videos/animations, you should add any new information to your textbook notes and copy into your notes any examples worked for you in the video, just as if you were sitting in class with that instructor. The exploration assignment is like a guided practice—concepts are still very new, but you should be getting more familiar with them.
- In-Class assignment – On most days that we meet for class, we will take some time to practice what you've learned and/or to apply the concepts to lab exercises.
- Homework assignment – Homework assignments for each section will be posted in MyMathLab under the Assignments button and will contain questions that may be multiple choice or fill-in-the-blank, but are primarily open-ended questions for problems that you work out. The questions generally give you 3 chances to get the question right before marking the problem wrong. You will then have access to a Similar Question button that will give you a new question and 3 more chances to get the question right. You have unlimited attempts on homework questions, so if you are persistent, do your work on time, and learn from your mistakes, you can earn 100% on all homework assignments. Also, every homework question has a Question Help button in the top right corner that will walk you through the solution, show you a similar example, link to the textbook section, sometimes links to a video example, or gives you a button to Ask My Instructor which sends me an email with your question. The purpose of homework is to practice, practice, practice! This is where you actually are learning the concepts, not just watching someone else work problems.

Course Evaluation:
- Daily Explore assignments will be posted, worth 5% of your grade. These are due before the class where the section will be discussed.
- There will be in-class assignments collected daily. By their very nature, in-class assignments can NOT be made up. The in-class average is worth 10% of your grade, and the lowest 2 in-class grades will be dropped.

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- Daily online homework assignments will be due weekly, usually on Monday nights. The homework average is worth 10% of your grade, and the lowest 3 homework grades will be dropped.
- There will be 6 online Quizzes (1 per chapter we cover) posted in MyMathLab under the Assignments button. You may prepare ONE 3"x5" handwritten notecard for your reference for each quiz, but other than that notecard and your calculator, each quiz is to be **completed on your own and without references**—no using your text, no Google, no Phone a Friend. The purpose of each quiz is to help you review the chapter and start to see the "bigger picture", rather than just one section at a time. Quizzes are TIMED and help get you ready for the Exams. You have two attempts on each quiz (I HIGHLY recommend taking your first attempt early enough that you have time to review your errors before taking the quiz again), and only the highest of your two attempts will count in your average. The Quiz Average is worth 10% of your grade, and the lowest quiz grade will be dropped.
- There will be 3 in-class exams. These will each be worth 15% of your grade. If an exam is missed for a legitimate reason, a makeup exam may be given. It is your responsibility to contact me to schedule a makeup exam.
- There will be 1 in-class cumulative final exam on **Tuesday, December 11th from 8am-10am**, worth 20% of your grade.
- **Late work:** Late work on Explore, Homework, and Quiz assignments will be accepted in MyMathLab with a 10% deduction **per day** late. This means that if an assignment has 10 questions, and you get 9 of them correct and on time, you earned a 90% on the assignment. If you get the same 9 of them correct, but 2 days late, you have earned 80% of 90%, which is only 72%. PLEASE do your assignments on time; don't shoot yourself in the foot!

Grading Policy:

Explore average	5%	90% - 100%	A
In-Class average	10%	80% - 89%	B
Homework average	10%	70% - 79%	C
Quiz average	10%	60% - 69%	D
Exams (3*15%)	45%	59% & below	F
Final Exam	20%		

Letter Grades: (as shown in the right columns above)

Attendance Policy: Students are expected to attend all classes in order to be successful in a course. The student may be administratively withdrawn from the course when absences become excessive as defined in the course syllabus. [*Absences for this course are considered excessive if you have 4 in a row or a total of 8. If you reach 4 consecutive absences or a total of 8 absences, you will be administratively withdrawn from the class with a grade of 'X' or 'F'.*]

When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. It is the student's responsibility to complete work missed within a reasonable period of time as determined by the instructor. Students are officially enrolled in all courses for which they pay tuition and fees at the time of registration. Should a student, for any reason, delay in reporting to a

class after official enrollment, absences will be attributed to the student from the first class meeting.

Students who enroll in a course but have "Never Attended" by the official census date, as reported by the faculty member, will be administratively dropped by the Office of Admissions and Records. A student who does not meet the attendance requirements of a class as stated in the course syllabus and does not officially withdraw from that course by the official census date of the semester, may be administratively withdrawn from that course and receive a grade of "X" or "F" as determined by the instructor. Instructors are responsible for clearly stating their administrative drop policy in the course syllabus, and it is the student's responsibility to be aware of that policy.

It is the student's responsibility to verify administrative drops for excessive absences through MySPC using his or her student online account. If it is determined that a student is awarded financial aid for a class or classes in which the student never attended or participated, the financial aid award will be adjusted in accordance with the classes in which the student did attend/participate and the student will owe any balance resulting from the adjustment.

Last day to drop is Thursday, November 15th.

SPC School Holidays:
> Monday, 9/3, Labor Day Holiday
> Friday, 10/12, Fall Break
> Wednesday-Friday, 11/21-11/23, Thanksgiving Holiday

Academic Integrity: It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own any work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension.

Cheating: Dishonesty of any kind on examinations or on written assignments, illegal possession of examinations, the use of unauthorized notes during an examination, obtaining information during an examination from the textbook or from the examination paper of another student, assisting others to cheat, alteration of grade records, illegal entry or unauthorized presence in an office are examples of cheating. Complete honesty is required of the student in the presentation of any and all phases of course work. This applies to quizzes of whatever length, as well as to final examinations, to daily reports and to term papers. Students caught cheating will receive a 0 on that assignment and face disciplinary action that can include being dropped from the class with a grade of 'F' and suspension from school.

Cell Phones: Cell phones must be put away and turned to silent mode or off for the duration of class.

Dress Code: Reasonable standards of decency apply to the college community. The student should dress in a manner which does not distract from the academic atmosphere. Revealing attire or clothing carrying obscene or offensive slogans is not permitted. In all academic buildings,

classrooms, offices, the Student Center, and dining facilities, students are required to wear shirts and shoes.

Language: Please be respectful of others and use language that is appropriate to the workplace.

Diversity Statement
In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Disability Statement: Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Special Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Special Services Coordinator. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611. The Disability Services website is at http://www.southplainscollege.edu/health/disabilityservices.php, and email is dvalles@southplainscollege.edu.

Title IX Pregnancy Accommodations Statement: If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact Chris Straface, Director of Health and Wellness at 806-716-2362 or email cstraface@southplainscollege.edu for assistance.

Non-Discrimination Statement: South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

Campus Concealed Carry Statement: Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: http://www.southplainscollege.edu/campuscarry.php

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Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

COURSE OUTLINE / CALENDAR*

Problems are assigned online for each section of the textbook that we cover. To access online assignments, you must have an access code (you can buy a code for MyMathLab bundled with your textbook or you can buy just the code at www.mymathlab.com) and register for our course (Course ID: **johansen83356**) at www.mymathlab.com Assignments have due dates, and you will lose 10% per day for work completed after the due date passes. To master the material and prepare for the exams, you **MUST** work extra problems!

Date	Content	Assignments
Week 1 8/28 8/30	**Syllabus, Assessment, & Functions and Graphs (Part 1)** • Syllabus Overview and Day 1 Assessment • 3.1 Functions • 3.2 Graphs of Functions	Read Sections 3.1-3.2 MML Orientation MML Explore 3.1-3.2 MML Hwk 3.1-3.2 **Due 11:59pm, 9/3**
Week 2 9/4 9/6	**Functions and Graphs (Part 2)** • 3.3 Applications of Linear Functions • 3.4 Quadratic Functions and Applications • 3.5 Rational Functions	Read Sections 3.3-3.5 MML Explore 3.3-3.5 MML Hwk 3.3-3.5 **Due 11:59pm, 9/10**
Week 3 9/11 9/13	**Functions and Graphs (Part 3) & Exponential and Logarithmic Functions (Part 1)** • 3.6 Rational Functions • 4.1 Exponential Functions • 4.2 Applications of Exponential Functions	Read Sections 3.6, 4.1-4.2 MML Explore 3.6, 4.1-4.2 MML Hwk 3.6, 4.1-4.2 MML Quiz 1 – Chapter 3 **Due 11:59pm, 9/17**
Week 4 9/18 9/20	**Logarithmic Functions (Part 2) & Review for Exam I** • 4.3 Logarithmic Functions • 4.4 Logarithmic and Exponential Equations • Review for Exam I	Read Sections 4.3-4.4 MML Explore 4.3-4.4 MML Hwk 4.3-4.4 MML Quiz 2 – Chapter 4 **Due 11:59pm, 9/24**
Week 5 9/25 9/27	**Exam I & Mathematics of Finance (Part 1)** • **Exam I** (Chapters 3-4) • 5.1 Simple Interest and Discount • 5.2 Compound Interest	Read Sections 5.1-5.2 MML Explore 5.1-5.2 MML Hwk 5.1-5.2 **Due 11:59pm, 10/1**
Week 6 10/2 10/4	**Mathematics of Finance (Part 2) & Systems of Linear Equations and Matrices (Part 1)** • 5.3 Annuities, Future Value, and Sinking Funds • 5.4 Annuities, Present Value, and Amortization • 6.1 Systems of Two Linear Equations in Two Variables • 6.2 Larger Systems of Linear Equations • 6.3 Applications of Systems of Linear Equations	Read Sections 5.3-5.4, 6.1-6.3 MML Explore 5.3-5.4, 6.1-6.3 MML Hwk 5.3-5.4, 6.1-6.3 MML Quiz 3 – Chapter 5 **Due 11:59pm, 10/8**

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Date	Content	Assignments
Week 7 10/9 10/11	**Systems of Linear Equations and Matrices (Part 2)** • 6.4 Basic Matrix Operations • 6.5 Matrix Products and Inverses	Read Sections 6.4-6.5 MML Explore 6.4-6.5 MML Hwk 6.4-6.5 **Due 11:59pm, 10/15**
Week 8 10/16 10/18	**Systems of Linear Equations and Matrices (Part 3) & Review for Exam II** • 6.6 Applications of Matrices • Review for Exam II	Read Section 6.6 MML Explore 6.6 MML Hwk 6.6 MML Quiz 4 – Chapter 6 **Due 11:59pm, 10/22**
Week 9 10/23 10/25	**Exam II & Linear Programming (Part 1)** • **Exam II** (Chapters 5 & 6) • 7.1 Graphing Linear Inequalities in Two Variables • 7.2 Linear Programming: The Graphical Method	Read Sections 7.1-7.2 MML Explore 7.1-7.2 MML Hwk 7.1-7.2 **Due 11:59pm, 10/29**
Week 10 10/30 11/1	**Linear Programming (Part 2)** • 7.3 Applications of Linear Programming • 7.4 The Simplex Method: Maximization	Read Sections 7.3-7.4 MML Explore 7.3-7.4 MML Hwk 7.3-7.4 **Due 11:59pm, 11/5**
Week 11 11/6 11/8	**Linear Programming (Part 3)** • 7.5 Maximization Applications Systems of Linear Inequalities in Two Variables • 7.6 The Simplex Method: Duality and Minimization	Read Sections 7.5-7.6 MML Explore 7.5-7.6 MML Hwk 7.5-7.6 **Due 11:59pm, 11/12**
Week 12 11/13 11/15	**Linear Programming (Part 4) & Review for Exam III** • 7.7 The Simplex Method: Nonstandard Problems • Review for Exam III	Read Section 7.7 MML Explore 7.7 MML Hwk 7.7 MML Quiz 5 – Chapter 7 **Due 11:59pm, 11/19**
Week 13 11/20 11/23	**Exam III & Thanksgiving Holiday** • **Exam III** (Chapter 7) • **Thanksgiving Holiday – No Classes!**	
Week 14 11/27 11/29	**Sets and Probability** • 8.3 Introduction to Probability • 8.4 Basic Concepts of Probability	Read Sections 8.3-8.4 MML Explore 8.3-8.4 MML Hwk 8.3-8.4 MML Quiz 6 – Chapter 8 **Due 11:59pm, 12/3**
Week 15 12/4 12/6	**Probability Distributions and Further Topics in Probability & Review for Final Exam** • 9.1 Probability Distributions and Expected Value • Review for Final Exam	Read Section 9.1 MML Explore 9.1 MML Hwk 9.1 **Due 11:59pm, 11/19**
Week 16 12/11	**Cumulative Final Exam** • **Final Exam, 8am-10am**	

*   Assignments and deadlines are subject to change at instructor's discretion, and all changes will be announced in class and posted in MyMathLab.