

**Math 111-Sections A -Mathematical Models for the Management Sciences
Spring, 2017**

Text: *Mathematical Applications for the Management, Life, and Social Sciences, (10th edition)*, by Ronald Harshbarger and James J. Reynolds.

Instructor: Kathy Bauman-161B Trexler Hall

Office Hours: M/ W/ F: 8:00-8:25 and 10:45-11:45. On M/W, I will also be in from 1:05-2:00. These hours are for both my Math 111 students and my INQ 240 students. I will add and announce additional hours as needed. These will be announced in class and posted on Inquire.

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Needs: Calculator (**you will need a graphing calculator-be able to use your calculator!**), a notebook, and your text. The calculator is a tool in your work-much of your work will be done without a calculator. You should organize class notes, assignments, quizzes, and tests in the notebook dedicated to this course. It is your responsibility to get any notes that you miss due to absences and to complete all assignments given during any absence. You must get these notes before seeing me for help. When absent, please check INQUIRE for announcements and assignments.

Course Objectives

1. To give the student an understanding of the basic theory and application of matrices, linear programming, and differential calculus.
2. To increase the student's skills in using mathematics to solve problems: in particular, to increase the student's ability to construct models of problems that arise in many areas, especially in the management sciences, to increase his/her ability to solve the models using mathematical concepts covered in this course.
3. To increase the student's ability to make judgments about problems and solutions to problems based on a mathematical model.
4. To increase the student's understanding of the role of mathematics in the management sciences.

Course Outcomes: Upon completing this course, the student should be able to:

1. solve linear equations (and applications) in one or more variables.
2. solve systems of linear equations (and applications) by utilizing graphing, elimination, and matrix row-reduction techniques.
3. solve quadratic functions and to utilize these functions in applications.
4. utilize both graphical methods and the simplex method to find the optimal value of a linear function, subject to constraints.
5. find the derivative of a function, interpret the derivative, and use the derivative for business applications.

Topics: Matrices, linear programming, limits and continuity, derivatives, and optimization. Chapter 0 will provide some review but it is expected that you will be competent in terms of Algebra I and Algebra II skills. Your text includes some review but if more is needed, you will need to work with me during office hours to master the necessary skills.

Academic Integrity: You are expected to be familiar with the Academic Integrity Code outlined in the booklet, *Academic Integrity at Roanoke College*. I take this topic very seriously. Work shall be your own. **The use of any electronic device during a quiz or exam is strictly prohibited.** Any use of such devices during a quiz or exam will be considered a breach of academic integrity. Basic handheld calculators may be used on certain quizzes and exams only when permitted by the instructor. **Cell phones and pagers must be turned off prior to entering the classroom. You are not to either send or receive text messages during class!!** Students will be required to pledge all work completed for a grade in this class.

Grading Policy: Your grade in this class will have 3 components: tests and exams, quizzes, and homework/attendance at presentations.

Tests and Final Exam: I am anticipating three tests-each counting 17% of the final grade. The final exam will be comprehensive and will count 20 % of your final grade.

Quizzes will be given frequently. I will give approximately 6-8 quizzes counting 50 points each but I will drop the 2 lowest quiz grades at the end of the semester. At times, we might utilize “pretend” quizzes. These are optional but will assist you in studying content that you have not be evaluated on with an actual quiz. The quiz average will count 17% of your final grade.

Homework will be given daily and graded both on effort and completion/accuracy. Effort grades may be assigned at any time. Included in effort will be the watching of any posted videos. I will grade homework on correctness after the assignments have been discussed/checked in class. This average will be weighted twice that of an effort grade. A homework grade will never be dropped. **HOMWORK IS NEVER OPTIONAL! HOMEWORK IS ESSENTIAL TO YOUR SUCCESS!** Your homework average will count 10% of the final grade.

Also, you will be required to attend a scholarly talk and to submit a one-page paper concerning that presentation. (Schedule will be provided as soon as it becomes available. I will also post my expectations for a reflection paper.) Your MCSP lectures/paper will count 2% of the final grade.

Grades will be assigned using this scale:

| | | | |
|----|--------|----|----------|
| A | 93-100 | C | 73-76 |
| A- | 90-92 | C- | 70-72 |
| B+ | 87-89 | D+ | 67-69 |
| B | 83-86 | D | 63-66 |
| B- | 80-82 | D- | 60-62 |
| C+ | 77-79 | F | Below 60 |

Policy on Make-Up Work: Make-up quizzes will be given only under the most dire of circumstances and must happen immediately! You will also have the option to drop a quiz that you have missed. If a test is missed, you need to contact me immediately to re-schedule the test. This is a topic that we will need to communicate about during the semester. If you do not complete the assigned homework and it is graded, I will not accept this as make-up work. **I do not accept late homework!**

Policy on expected number of hours of work per week: Per the Academic Catalog, “For each one-unit course, students are expected to complete 12 hours of work inside and outside of class each week.” Realistically, this may vary due to the strength of the background of each individual student with respect to course content.

Attendance Policy: Attendance is expected! You are responsible for all work done in classes that are missed. Information on assignments will be posted daily on Inquire. If you miss 6 classes, you may be dropped from this course. Please see me if you have questions concerning this policy. Communication on this topic is extremely important. **I do not consider absences as excused or unexcused!**

****I also feel strongly about students being on time to class. Being tardy twice will count as one absence.**

It is your responsibility to make sure these are recorded correctly!

If you are in violation of the attendance policy and are not dropped from the course, your final grade will be lowered by a point for each additional absence.

Use of Inquire: I will use Inquire to communicate with you often. Assignments and announcements will be posted daily and grades will be recorded there. The posting of grades is a courtesy to my students. I will also post keys, notes, and assigned videos for you. If you have trouble using Inquire, please contact the Help Desk. I will frequently e-mail information to you so please check Inquire and e-mail daily. I also post notes for you. Inquire is a tool that will greatly assist you!

Services Offered by the Goode-Pasfield Center for Learning and Teaching.

The Writing Center @ Roanoke College, located on the Lower Level of Fintel Library, offers writing tutorials focused on written and oral communication for students working on writing assignments/projects in any field. Writers at all levels of competence may visit the Writing Center at any point in their process, from brainstorming to drafting to editing, to talk with trained peer tutors in informal, one-on-one sessions. The Writing Center is open Sunday through Thursday from 4 to 9 pm. Simply stop in, or schedule an appointment by going to www.roanoke.edu/writingcenter, where our schedule of writing workshops and creative writing playshops is also posted. Questions? Email writingcenter@roanoke.edu or call 375-4949. Like our Facebook page for updates!

Subject Tutoring is an Internationally Certified Tutoring Center through the College Reading and Learning Association (CRLA). Our highly trained staff offers individual tutoring appointments for the following subjects: Business, Economics, Mathematics, Modern Languages, Lab Sciences & Social Sciences. Subject Tutoring is located on the lower level of Fintel Library in room 05 from 4-9 p.m. Sunday – Thursday. Students can log on to make an appointment at www.roanoke.edu/tutoring in 15, 30 or 45 minute intervals. For questions or concerns, please contact Shannon McNeal at 540-375-2247 or mcneal@roanoke.edu. I do use my office hours to work with students after you have attempted your assignment. I also encourage the use of the Peer Tutoring Program. I will give extra credit for attending sessions here. **You must sign in and also must stay for 30 minutes**. A point is given each time you attend but you can only receive up to 5 points for each test.

The Office of Disability Support Services (DSS), is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. DSS provides reasonable accommodations to students with documented disabilities. To register for Disability Support Services, students must self-identify to the Office of Disability Support Services, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. Please contact JoAnn Stephens-Forrest, MSW, Coordinator of Disability Support Services, at 540-375-2247 or e-mail her at: stephens@roanoke.edu to schedule an appointment. If you have registered with DSS in the past, and would like to receive academic accommodations for this semester, please contact Ms. Stephens-Forrest at your earliest convenience, to schedule an appointment.

Note: Material, content, scheduling, and evaluation method may be changed if the instructor decides it is necessary.

This course may not be taken for credit if credit has been received for Mathematics 112 or higher. If you have questions concerning this, please contact your advisor immediately. Also, you need to earn a C or better in this course or in INQ 240 to declare a major in Business Administration. Once again, please contact your advisor if you have questions regarding the necessary grades/courses.

Below you will find the sequence of topics covered and the dates for quizzes and tests. If the schedule needs to be adjusted, you will receive notice of this. These dates are **anticipated dates**.

Chapter 0: Algebraic Concepts

- 0.2: The Real Numbers
- 0.3: Integral Exponents
- 0.4: Radicals and Rational Exponents
- 0.5: Operations with Algebraic Expressions
- 0.6: Factoring
- 0.7: Algebraic Fractions
- 7.5: Counting: Permutations and Combinations

Chapter 1: Linear Equations and Functions

- 1.1: Solutions of Linear equations and inequalities in one variable
- 1.2: Functions
- 1.3: Linear Functions
- 1.4: Graphs and Graphing Utilities
- 1.5: Solutions of Systems of Linear Equations
- 1.6: Applications of Functions in Business and Economics

Chapter 2: Quadratic Equations

- 2.2: Quadratic Functions: Parabolas
- 2.1: Quadratic Equations
- 2.3: Business Applications of Quadratic Functions
- 2.4: Special Functions and Their Graphs

Chapter 3: Matrices

- 3.1: Matrices
- 3.2: Multiplication of Matrices
- 3.3: Gauss-Jordan Elimination
- 3.4: Inverse of a Square Matrix (this topic may be optional)

Chapter 4: Inequalities and Linear Programming

- 4.1: Linear Inequalities in Two Variables
- 4.2: Linear Programming: Graphing Method
- 4.3: The Simplex Method

Chapter 9: Derivatives

- 9.1: Limits
- 9.2: Continuous Functions
- 9.3: The Derivative
- 9.4: The Derivative Formulas
- 9.5: The Product Rule and the Quotient Rule
- 9.6: The Chain Rule and the Power Rule
- 9.7-Chapter 10: Material covered as time allows.

Final Exam**Exam Schedule:**

Block 1: Tuesday, May 2nd: 8:30-11:30 AM

Please plan accordingly!

Schedule of Tests and Quizzes:

**Tests: Test #1-Feb. 10th
Test #2-March 17th
Test #3-April 19th**

**Quizzes: Quiz #1-Jan. 25th
Quiz #2-Feb. 6th
Quiz #3-Feb. 17th
Quiz #4-March 3rd
Quiz #5-March 24th
Quiz #6-April 3rd
Quiz #7-April 12th**

Please remember that this schedule may be subject to change!!