

**Math 111-Sections B -Mathematical Models for the Management Sciences
Spring, 2016**

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 9:45-11:45. 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.

Office Phone: 375-2450

E-mail address: bauman@roanoke.edu

Needs: Calculator (**you will need a graphing calculator-be able to use your calculator!**), graph paper, and a notebook. 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.

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.

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 5-8 quizzes counting 50 points each but I will drop the 2 lowest quiz grades at the end of the semester. 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. HOMEWORK IS NEVER OPTIONAL! 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. Two tardies 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!

Exam Schedule: Block 1: Tuesday, May 3rd: 8:30-11:30 AM

Please plan accordingly!!

SPECIAL SERVICES:

The Office of Disability Support Services, located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library, provides reasonable accommodations to students with identified disabilities. Reasonable accommodations are provided based on the diagnosed disability and the recommendations of the professional evaluator. In order to be considered for disability services, students must identify themselves to the Office of Disability Support Services. Students requesting accommodations are required to provide specific current documentation of their disabilities. Please contact Dr. Bill Tenbrunsel, Director of the Center for Learning & Teaching, at 540-375-2247 or e-mail tenbruns@roanoke.edu.

.If you are on record with the College's Office of Disability Support Services as having academic or physical needs requiring accommodations, please schedule an appointment with Dr. Tenbrunsel as soon as possible. You need to discuss your accommodations with him before they can be implemented. Also, please note that arrangements for extended time on exams, testing, and quizzes in a distraction-reduced environment must be made with the Center for Learning & Teaching at least 2 business days (M-F) *before every exam*.

Subject Tutoring is a CRLA Nationally Certified Program located on the lower-level of Fintel library in room 005. Subject Tutoring offers individual appointments in 30-minute intervals for Lab Sciences, Modern Languages, Math & CPSC, Social Sciences, Business & Economics. Walk-in sessions are also available. For a list of tutorials or to make an appointment, go to www.roanoke.edu/tutoring.

I also use my office hours to work with students. I do encourage the use of the Peer Tutoring Program. I will give extra credit for attending sessions there. A point will be given each time you attend and you may receive up to 5 test points for each test. It is your responsibility to sign in so that I am notified of your attendance.

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 approximate placement of quizzes and tests. Adequate notice will always be given for both. Any changes will be announced in class and posted on Inquire. Please note that there are no dates given for any quizzes/tests. You will be given at least a week's notice for each. It is my goal to be flexible in terms of scheduling.

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

Quiz #1

- 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

Quiz #2

1.2: Functions

Test #1

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

Quiz #3

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

Quiz #4

Test #2

Chapter 3: Matrices

3.1: Matrices

3.2: Multiplication of Matrices

3.3: Gauss-Jordan Elimination

3.4: Inverse of a Square Matrix

Quiz #5

Chapter 4: Inequalities and Linear Programming

4.1: Linear Inequalities in Two Variables

4.2: Linear Programming: Graphing Method

4.3: The Simplex Method

Quiz #6

Chapter 9: Derivatives

9.1: Limits

9.2: Continuous Functions

Test #3

9.3: The Derivative

9.4: The Derivative Formulas

9.5: The Product Rule and the Quotient Rule

Quiz #7

9.6: The Chain Rule and the Power Rule

9.7-Chapter 10: Material covered as time allows.

Final Exam