Northern Michigan University - Winter 2016
MA 103 – Finite Mathematics

Section 02 - 10495
Tues. and Thurs. 5:00 p.m.

3100 Jamrich Hall

instructor:	**Pat Jennings**
office:	*by arrangement*
office phone:	**228-2808 (leave message)**
email:	**pjenning@nmu.edu**
	Note: the best way to contact me is by email. Be sure to leave your phone number so that I can call you back

office hours: **Tues and Thurs 6:40 to 7:30** *in the classroom*
Other times by appointment

course content: The course covers linear equations, systems of linear equations, matrices, inequalities, linear programming, functions, the mathematics of finance, permutations, combinations and probability.

This course is designed primarily for students in business, economics, management, and the social sciences and life sciences.   MA 103 builds on the algebraic skills of MA 100 while emphasizing applications, modeling, and decision-making from business, social and natural sciences, medicine, and other areas. It is a prerequisite for MA 171 and can be used as a Liberal Studies elective under Division III Natural Sciences/Mathematics.

Text: Finite Math, Second Edition, Berresford and Rockett (2005 Houghton Mifflin Company)

There is also an optional student manual that you may purchase, but it is not required.

Tutoring: There is *Math Lab* that will be available for tutoring. I will email you the schedule after the semester starts.

Computer: An NMU email account is required. Note that, if you use the NMU web based email, your old messages are deleted periodically. I will be sending you emails periodically throughout the semester so you are responsible for reading your email in a timely manner and saving any important information, such as test answer keys.

A **graphing calculator** is needed for this class. I suggest a Texas Instruments TI-83 or similar calculator. I will show you examples using a TI-83 in class. Keep in mind, however, that your calculator may have slightly different functions. If you are not sure how to use them, be sure to ask me after class.

Alternatively, you can download a TI Emulator for the TI-73, TI-83+, and TI-83+ Silver Edition at http://education.ti.com/educationportal/sites/US/productDetail/us_sdk_73_83_84.html.

Click on the download button underneath the calculator. Select the first link "TI-83 Plus SDK" and click "continue as guest." Then, choose Run from the pop-up menu. You will need to restart your computer after installing the emulator.

To operate this emulator, instructions may be found at http://www.austintown.k12.oh.us/~aust_tr/homework/quickfiles/TI%2083%20and%2073%20Emulator/TI-83+%20Emulator%20Install%20and%20How%20to%20Use.pdf.

Grading: Grades will be weighted according to the following:

Chapter Tests   70%
Quizzes   10%
Final Exam   20%

The final grade will be a weighted average of the above corresponding to the following scale:

A   93 – 100
A-   90 – 92.9
B+   87 – 89.9
B   83 – 86.9
B-   80 – 82.9
C+   77 – 79.9
C   73 – 76.9
C-   70 – 72.9
D+   67 – 69.9
D   60 – 66.9
F   less than 60

There will be no other grades given and no "extra credit" assignments are available. Incompletes will be pursuant to University policy.

The final exam is scheduled for this course is:

Monday, April 25, 2016 at 4:00

You must take the final exam during the class period that you are enrolled in unless you make prior arrangements with your instructor.

Prerequisites: MA 100 (passed with C- or better) or satisfactory score on the math placement exam.

Chapter Tests: All chapter tests will be given during class and you will have an hour to take each test. There will be a minimum of 5 chapter tests, but there may be more, depending on how the class goes. If it turns out that there are more than 5 tests, I will drop the lowest test score.

All chapter tests will be closed book and open notes. If you use notes, they must be your own. You may only use a calculator and any documents that I send you by email. You may not use any other online resources.

I will have your graded tests returned to you within a week, barring unforeseen circumstances. After the last person takes the test, I will email you the answer key. You are responsible for reviewing the answer key and, if necessary, saving it on your computer.

Chapter tests will be during the second half of the regular class period and you may leave when you have finished. There is no time limit. Test dates will be announced in class and by email.

Makeup Tests: You MUST take the test during the regular class period. However, you may take a makeup test if you have a legitimate and verifiable reason (i.e. illness, sanctioned university activity, etc) and you notify me by email before the scheduled test date, unless there is an emergency.

All makeups will be taken in the testing room at the Math and Computer Science Department office on the second floor of Jamrich Hall, room 2201. Testing room hours are strictly Monday-Friday from 8:00 am – 12:00 pm and 1:00 pm – 5:00 pm. Your exams will be taken away at 12:00 pm and 5:00 pm, whether you are finished or not. Please make sure that you have enough time to complete the exam. Also, you must also follow all instructions by the secretaries. Failure to do so will result in a zero for this test. Note that the secretaries cannot answer any questions about your test. If you have any questions about the test, contact your instructor.

Students with disabilities should work with the instructor and Disability Services to arrange for taking exams.

Quizzes: Quizzes will be given once or twice a week, unannounced, usually spontaneous, and cannot be made up under any circumstances. The easiest way to pass a quiz is to show up in class. If you miss only one or two quizzes, it will not significantly affect your grade, but, missing most of them will. You are encouraged to work with your classmates on the quizzes and I will come around and help you.

Homework: You should work out a substantial number of exercises from the text that pertain to the sections that we are going over. However, textbook exercises will not be collected or graded. I will let you know which section of the text is covered in class, but I will not assign exercises from the text.

If you want me to go over a particular textbook exercise in class, please email me the page, section and exercise number so that I have a chance to review it. I will probably not go over any homework problem unless you email it to me first!

Study Habits As a general rule, you should spend two hours on homework for every hour that you are in class. (This applies for all courses that you take in college) Since this is a 4 credit hour course, you should spend at least 8 hours per week on reading and homework assignments. If you have had an especially hard time with mathematics in the past, plan on spending at least 12 hours per week for this course.

Budget your time wisely! There is nothing worse than cramming for a test on Friday night when your friends are out having a good time. I recommend that you set a schedule for this course (as well as your other courses) and stick to it. Plan your schedule now.

Attendance: Other than the quiz grades, I will not be taking attendance for this course. Since you are making a financial investment in this course, it is to your advantage to put your best effort into learning the material that is presented by attending class regularly, keeping up with the homework, and asking for help if you do not understand something. If you are not able to attend class due to work commitments, child care, or some other reason, let me know and we can work out some reasonable arrangement.

Academic Honesty: You must do all of your own work. If you cheat, you will not learn the material, and if you get away with passing this course by cheating, you will have a very difficult and frustrating time in your later courses. Also, you will be constantly looking over your shoulder worried about

getting caught, and that, in itself is not worth it. If you do get caught cheating on a test or other assignment, you will get an automatic **F** for this course, and you could be subject to other sanctions. This includes having someone else take your online test or plagiarizing the project assignment. The bottom line is, if you cheat, you are really cheating yourself out of time, money, and, possibly, your future career.

Nondiscrimination Policy: Northern Michigan University does not unlawfully discriminate on the basis of race, color, religion, sex, national origin, age, height, weight, marital status, familial status, handicap/disability, sexual orientation, or veteran status in employment or the provision of services, and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities an equal opportunity to participate in all programs and activities.

Anyone having civil rights inquiries may contact the Equal Opportunity Office, 502 Cohodas Hall, telephone number 906-227-2420.

Disabilities: If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1700 or disserv@nmu.edu). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

Course Objectives: Linear equations, systems of linear equations, matrices, inequalities, linear programming, functions, the mathematics of finance, matrices, permutations, combinations and probability.

The course consists of a study of the methods of elementary probability and statistics. Some time is devoted to finding probabilities for both discrete and continuous probability functions, and discussing the role probability plays in estimation and decision making. The main emphasis of the course, however, is on methods of describing data, finding sampling estimates and testing hypotheses. Throughout the course, applications are stressed as is the interpretation and understanding of the statistics and methods used.

The student will:
- Understand linear functions, including functional notation, graphing, and modeling

- Understand finance mathematics, including amortization, and modeling mortgages and annuities
- Solve systems of equations using matrices
- Model and solve linear programming applications using the simplex method
- Understand basic probability and statistics concepts

Assessment of these course objectives will be through chapter tests, quizzes and the final exam

Course Content

(The numbers below do not necessarily correspond to the chapters in the textbook)

1. Review of Algebra
    a. Polynomials and rational expressions
    b. Solving equations and inequalities
    c. Exponents and radicals
2. Linear Functions
    a. Equations of lines
    b. Functional notation and definitions
    c. Linear functions and models
    d. Math models and curve fitting
3. Matrices
    a. Definitions and applications for matrices
    b. Solving systems of equations using matrices
    c. Operations with matrices and finding inverses
    d. Modeling and solving problems using matrices
4. Linear Programming
    a. Graphing linear inequalities
    b. Solving linear programming problems graphically
    c. Modeling and solving linear programming applications
5. Finance
    a. Simple and compound interest
    b. Geometric sequences and annuities
    c. Loans and amortization
    d. Present value of future money

6. Probability
   a. Notation, Venn diagrams, counting techniques
   b. Probability of simple and compound events
   c. Conditional probability
   d. Bernoulli trials
   e. Probability distributions of random variables; means (or expected values)
7. Introductory Statistics
   a. Graphical representations of data-sets, frequency tables
   b. Numerical summaries of data-sets