MA 103 – Finite Mathematics - 4 credits
Winter 2019 Course Syllabus

MA 103 section 50 – WEB CRN 10345 Meeting Times/Place: Online

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Contacting me directly: My office hours will be conducted online via the CHAT feature within Educat. I will be in the CHAT feature regularly 4 times during the week (exact times to be announced the first week). I will also be happy to answer any questions via e-mail. Please be aware that I will check my course e-mail regularly twice a day. You may have to wait a bit for an answer, but I WILL get back to you! If you are having issues with a particular problem, it is helpful if you can take a screenshot of the problem and attach it to the e-mail you send to me. That way, I know which problem and what values you have been assigned for that problem.

Prerequisites: MA 100 (Passed with C- or better) or satisfactory score on the math placement exam. Also, students who do not complete the Educat Online Course Preparation Tutorial or do not register for the MyMathLab homework by the Monday of the week after class starts will be dropped from the course for non-attendance.

Course Access: We will be using NMU's Educat (https://educat.nmu.edu/) as the class platform for this course. All grades and course directions will appear on the Educat homepage for this course. The Online book, course materials, homework, and tests will be accessed on Pearson's MyMathLab (www.MyMathLab.com) for this course. There will be a link to this site at the top of our Educat homepage.

Text: *Finite Mathematics, 12nd Edition*, by Goldstein. Purchase the online homework package as well. Note: the online homework package has a copy of the e-text embedded in it, so if you think you can manage without a physical copy of the book, you can get by with just the online homework. Some students do better with a physical book to look at. If this is the case, just be aware that you still need to purchase the online homework access as well.

Course Description: 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 satisfies the foundations of natural science- mathematics requirement [Division III].

Course Content:

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)

Learning Activities: You are expected to participate in class each day and are responsible for the material covered on that day. Mathematics is like a sport. In order to improve, you must be consistent and practice! Math courses in particular tend to be time intensive. Set aside 1-2 hours each day to learn the content for that day and work on the homework. A course outline is given for this course and is a good guide for how to pace your work through the material so that you are ready to take the tests at the scheduled times. If you do not have 1-2 hours 4x a week to work on this course, you may want to reconsider taking it. Class learning activities include:

Student to Content:

- Read the directions for the current week.
- Download the section Power Points to aid in note taking.
- Read through the text material for each section and take your own notes.
- Watch the content videos for section material.
- Do the assigned homework problems and take the assigned tests.

Student to Instructor/Student to Student:

- Contribute to the class Discussion Forums each week (Spring Break and Finals week excluded) by responding to the weekly question posted. If a worked solution is to be posted, it must have the section number, the problem number, and the problem written out, as well as the detailed solution (note that your numbers may be different than others, but the main question should be the same). The best way to respond to this type of question is to take a picture of your worked out solution and upload it to the Discussion Forum under the appropriate question. This will allow you to compare your work to that of your peers and help you to give and receive feedback to each other on the lesson material.
- Use the CHAT feature and e-mail to interact with other students directly, and to visit with the instructor during online office hours.

Homework: Will be assigned on a **daily** basis and due each week on Sunday night at midnight EST. **For each hour of "class" time (i.e. learning the material), you should expect an equal amount of time spent on the homework problems.** Do NOT wait until the last minute to start the homework, so that you can get help if you need it before the due dates. The closer you can stick to the daily schedule the better.

Testing: Tests will be in an online format and very similar to the homework. **You will need a password to access each test. The password will be posted on Educat at 8am on the day of each test.**

Test Times and Dates:

Feb 5 - Test 1, Covers Systems of Equations (chapters 1 and 2)

Feb 26 – Test 2, Covers Linear Programming (chapters 3 and material from chapter 4)
March 26 – Test 3, Covers Mathematics of Finance (chapter 10, sections 10.1 thru 10.4)
April 29 - Final, Covers Counting Methods and Probability (chapters 5 & 6)

Tests may only be made up with a documented, validated excuse. If you know AHEAD of time that you have a test conflict, let me know and I will be happy to make alternate arrangements!

Technology Requirements: This is an online course, and as such requires a computer with internet access, a valid NMU e-mail address, and EduCat access. This course will also use a graphing calculator and/or graphing software. I will be using a TI-84 plus graphing calculator for my examples. You can still purchase a physical calculator (if you think you will need one to take some sort of standardized test in the future, or if you plan to go on to take Statistics, this would be a good time to really learn how to use it). However, nowadays there are MANY options available to you. There are two very nice phone apps to try that only cost about 6$ (versus 90$ for the calculator!). They are *wabbitemu* and *GrafNCalc83*. There is also a free app/website called Desmos that also will do much of what we require in this class. Excel will do much of the finance calculations when we get to the finance section. In other words, there are lots of technology options, and I will direct to you to some learning material for each of those topics as we cover them. You will need to get yourself up to speed on the technology of your choice, as we simply do not have the time in class to go over each option. **You are always allowed to use a calculator/computer (or some sort of technology) on all homework and tests in this class ☺!**

If you run into technology issues, you can contact the MyMathLab Pearson Tech Support, or the NMU campus Computer IT services in LRC 116 (phone 227-2468).

Grades: Your grade will be based on the percentage you achieve of the following scores:

Discussion Forum Posts			
14 weekly @ 3 pts each	42 pts		
		Grading Scale:	
4 Tests @ 100 pts each	400 pts	90% and up	A's
		80% - 89%	B's
		70% - 79%	C's
Homework grade from		60% - 69%	D's
MyMathLab	100 pts	Below 60 %	F
TOTAL POINTS:	542 pts		

Extra Help: If you have access to campus, be sure to take advantage of the following FREE Tutoring Centers!

Math Tutor Lab.	West Science 3810.	M – TH 9 - 4 and F 9 – 3
All Campus Tutoring.	Learning Resource Center 111H.	S – W 2 – 10:00 p.m.

Also consider reaching out to the other students in the class via the Educat CHAT feature within our Educat Course Homepage. Your peers are an excellent source of help! Looking through the Discussion Forum posts will also be a valuable resource to see how others have approached a problem. Be sure to practice Netiquette when interacting with others in an online environment.

Foundation of Natural Sciences/Mathematics Requirement: This course satisfies the Foundation of Natural Sciences/Mathematics requirement. Students who complete this course should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes;

express relationships in the symbolic language of mathematics; and appreciate the role of mathematics in analyzing natural phenomena.

ADA Statement: 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). 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.

Student Learning Outcomes

Upon successful completion of this course the student will be able to:

- ➢ Solve systems of equations using matrices.
- ➢ Model and solve linear programming application problems.
- ➢ Understand and utilize the financial mathematics behind interest, amortization, annuities, and sinking funds.
- ➢ Use basic counting techniques to calculate probabilities for a wide variety of outcomes and events.

Student achievement of these learning outcomes will be measured through:

Performance on homework and exams, and contributions to the course Discussion Forum.