MA120 Finite Mathematics

Syllabus

Instructor: Dr. Olga Chuyan

Course Description
This course is an introduction to mathematical methods used in economics, business, and social sciences. We will develop understanding of mathematical tools and models that can be useful for expressing and analyzing problems in these areas. Our major topics will be linear systems, matrix operations, linear programming by graphing and simplex method, and the mathematics of finance.

Required Course Textbook

Course Objectives

- To develop mathematical thinking.
- To see how mathematics works in business and economics.
- To acquire ability to create mathematical models for business problems.
- To develop arsenal of mathematical tools for analyzing and solving real-life problems.

Teaching Strategies
All new material will be introduced in class first. We will discuss it and work through a few examples. Your active involvement is crucial: you are encouraged to participate in the discussion and contribute ideas.

The next stage will be your work at home with your class notes and the textbook. Please read both your notes and the assigned textbook material making sure you understand everything, study all the examples, and then do the assigned problems. If something is unclear, formulate it as a question for the next class. Group work is a wonderful tool to use at this stage.

At the beginning of each class, we will discuss the assignment from the previous class meeting and address all concerns and uncertainties. Please do not leave anything unclear: we can only move forward successfully if we have no hazy areas left behind. All questions are always welcome: before, during, or after the class.

Course Requirements

- You are expected to attend all classes, to be on time for classes, and to come prepared. Please do the assigned reading, study the examples, solve the assigned problems, and formulate questions to raise in class. Never leave anything unclear.
- Every Friday, we will have a short written quiz on the material covered during the previous two classes.
- We will have a mid-term exam on February 21 and a final exam on May 2. Both will be written tests, and the final exam will be comprehensive.
Grading Method

<table>
<thead>
<tr>
<th>Quizzes</th>
<th>30%</th>
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<tbody>
<tr>
<td>Mid-term exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final exam</td>
<td>40%</td>
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The results will be converted to a letter grade in accordance with the grading policies of the college.

Classroom Policies

- In case of illness or an emergency that will require missing a class, please contact me – if at all possible, before the class. Let me know of any anticipated absences as early as possible. If a student is absent more than three times, we will set up a meeting to discuss the advisability of remaining in the class.
- You can make an appointment with me, individually or in groups, by phone or by e-mail, to address any unclear topics. Please do not hesitate to contact me whenever you need some help.

Tentative Course Outline

Linear Systems
Systems of two equations with two variables and of three equations with three variables

Gauss–Jordan method
Matrix operations: addition, subtraction, multiplication
The inverse of a matrix
Leontief input–output model in economics
Linear regression
Linear Programming
Graphical solution for linear inequalities in two variables
Geometric approach to linear programming
Formulating linear programming problems
Simplex method

Mathematics of Finance

Simple and compound interest

Single and continuous deposits

Annuities, sinking funds, amortization