# MATH 115 --- TENTATIVE SYLLABUS --- AUTUMN SEMESTER 2012

Professor Joyce Schlieter  
Section 42 meets MW 5:10-6:30 in MA 103 [no Labs]

Text: *Finite Mathematics* by Soo T. Tan  
(UM custom edition from 10th edition by Cengage Learning bundled with WebAssign access code)

Notes:  
1. a few copies are on “Reserve” in the Library  
2. Graphing Calculator required  
3. software “www.webassign.net” needed for Homework

Supplement: some handouts may be given during the semester

[the following schedule is subject to minor revisions as the semester progresses]

<table>
<thead>
<tr>
<th>WEEK #</th>
<th>MONDAY</th>
<th>WEDNESDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 : Chapter 1</td>
<td>Aug 27 : 1.1-1.3</td>
<td>Aug 29 : 1.3-1.5</td>
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<tr>
<td>2 : Chap 1/2</td>
<td>Sept 3 : HOLIDAY</td>
<td>Sept 5 : 1.5,2.1/2.2</td>
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<tr>
<td>3 : Chapter 2</td>
<td>Sept 10 : 2.2,2.3</td>
<td>Sept 12 : 2.4,2.5</td>
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<tr>
<td>4 : Chapter 2</td>
<td>Sept 17 : 2.5,2.6</td>
<td>Sept 19 : 2.6/rev</td>
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<td>5 : EXAM1, Chap 3</td>
<td>Sept 24 : rev/EXAM1</td>
<td>Sept 26 : 3.1,3.2</td>
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<tr>
<td>6 : Chapter 3, 6.1</td>
<td>Oct 1 : 3.2,3.3</td>
<td>Oct 3 : 3.3,6.1</td>
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<td>7 : Chapter 6, 7.1</td>
<td>Oct 8 : 6.2-6.4</td>
<td>Oct 10 : 6.4,7.1</td>
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<tr>
<td>8 : Chapter 7</td>
<td>Oct 15 : 7.2-7.4</td>
<td>Oct 17 : 7.4,7.5/rev</td>
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<tr>
<td>10 : Chapter 8</td>
<td>Oct 29 : 8.1,8.2</td>
<td>Oct 31 : 8.2,8.3</td>
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<tr>
<td>11 : Chapter 8</td>
<td>Nov 5 : 8.4</td>
<td>Nov 7 : 8.5</td>
</tr>
<tr>
<td>12 : Chap 8, EXAM3</td>
<td>Nov 12 : HOLIDAY</td>
<td>Nov 14 : 8.5,8.6/rev</td>
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<td>14 : Chapter 9?</td>
<td>Nov 26 : 8.6,9.1?</td>
<td>Nov 28 : 9.1,9.2?</td>
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FINAL EXAM – Day:  WED DEC 12th  Time:  5:30 – 7:30pm
**Learning Goals**

1. To master the basic concepts of lines, linear systems, matrices and linear programming (graphical method only).
2. To understand basic probability concepts: probability models (Venn diagrams, two-way tables), sample spaces with equally likely outcomes (counting), conditional probability (tree diagrams), Bayes’ Theorem, binomial probabilities, prob dist.
3. To understand the rudiments of statistics: measures of center and spread, the normal dist [normal approx of binomial?].

4. To learn how to use the above concepts to solve application problems (including precisely formulating a problem and then interpreting solutions).

**Course Content** [we will cover Chapters 1-3 and 6-8 of the text, plus as much of Chapter 9 on Markov Chains as time allows]

Chapter 1 : Straight Lines and Linear Functions
   1.1 = The Cartesian Coordinate System
   1.2 = Straight Lines
   1.3 = Linear Functions and Mathematical Models
   1.4 = Intersection of Straight Lines
   1.5 = The Method of Least Squares (& Correlation Coefficient)

Chapter 2 : Systems of Linear Equations and Matrices
   2.1 = Solutions of Linear Equations : An Introduction
   2.2 = Systems of Linear Equations : Unique Solutions
   2.3 = Systems of Linear Equations : Under/Over Determined
   2.4 = Matrices
   2.5 = Multiplication of Matrices
   2.6 = The Inverse of a Square Matrix

Chapter 3 : Linear Programming : A Geometric Approach
   3.1 = Graphing Systems of Linear Inequalities (two variables)
   3.2 = Linear Programming Problems
   3.3 = Graphical Solution of Linear Programming Problems

Chapter 6 : Sets and Counting
   6.1 = Sets and Set Operations
   6.2 = The Number of Elements in a Finite Set
   6.3 = The Multiplication Principle
   6.4 = Permutations and Combinations

Chapter 7 : Probability
   7.1 = Experiments, Sample Spaces and Events
   7.2 = Definition of Probability
   7.3 = Rules of Probability
   7.4 = Use of Counting Techniques in Probability
   7.5 = Conditional Probability and Independent Events
   7.6 = Bayes’ Theorem

Chapter 8 : Probability Distributions and Statistics
   8.1 = Distributions of Random Variables
   8.2 = Expected Value
   8.3 = Variance and Standard Deviation
   8.4 = The Binomial Distribution
   8.5 = The Normal Distribution
   8.6 = Applications of the Normal Distribution

Chapter 9 : Markov Chains
   9.1 = Markov Chains
   9.2 = Regular Markov Chains
   9.3 = Absorbing Markov Chains