Making tough decisions—can computers help? Students will learn to use Internet technologies as well as techniques in computer modeling for critical thinking, policy analysis and decision support. Topics include a review of quantitative methods for strategic analysis, tools for making tough decisions, and a survey of formal modeling techniques.

Prerequisites:
This course assumes that you have basic familiarity with microcomputers and spreadsheet software such as Microsoft Excel. The first problem set will help you gain/refresh the basic computing skills required for the majority of this course. Students with experience using spreadsheets will have an easier time with this assignment, and those with less may take more time.

Purposes:
This course is an introduction to computer-based tools for planning, policy analysis and decision making. The course has three goals:

- To develop technical skills in the use of microcomputers including the use of spreadsheets, databases, communications and the use of web-based resources.
- To develop sophistication in the application of computer-based tools to the tasks of public administration, including planning, policy analysis and decision making.
- To understand facets of the management of information resources in the public sector, including database management, design and information transfer.

Required Texts and Material:
There will be required readings from a variety of sources. These readings will be made available on line through the Blackboard Learning System. This system is accessible via MyUAlbany.

Recommended Software:
Microsoft Office Professional (Word, Excel, and Access)

Topics and Assignments:
The attached list of topics shows the timing of the major topics, as well as the dates when readings and assignments are due. Since this schedule may change during the semester, it
is important to make note of the changes announced during class. If the schedule changes significantly, I will hand out an updated version. There are a total of 9 problem sets due throughout the semester. These problem sets will be made available in advance, and are due as shown on the schedule.

The assignments are a place to develop understandings and skills. I will read the work you hand in, comment on it as time permits, and record the assignments that were handed in on time. The problem sets will not be graded in detail. However, full credit will not be given for assignments handed in late or those that are not substantially complete.

Exams and Grading:
Grading is based on the following weights:

- **Midterm Exam**: 30%
- **Final Exam**: 30%
- **On-Time and Complete Problem Sets**: 30%
- **Class Attendance and Participation**: 10%

**Do not rely on the grade calculator in Blackboard. It does not factor in the weightings above and is very misleading.**

Time Commitment for this Course
This is a three-credit course and you should plan on spending three hours in class and approximately six to eight hours per week completing the readings and problem sets. Students with strong backgrounds in computing may spend less time than this and students with little experience using the software may have to spend more time than this—especially on the first few assignments.

Plagiarism and Cheating:
Due to the intensive nature of this course, students are encouraged to form study groups and to work together on assignments. Learn by interacting with one another — support and help one another. **However, each student should submit answers to the problem sets that are expressed in their own words. Submission of a “group” answer is not permitted; submission of group answers to satisfy an individual’s problem set assignment constitutes academic misconduct.** Some assignments such as in-class or take-home exams are to reflect only individual effort. For these assignments you are expected to neither give nor receive assistance from anyone.

As a policy for this course, plagiarism or cheating will result in a failing grade for the whole course. In addition, as instructor, I will pursue further disciplinary action at the University level. For the purpose of this course, the following are taken as evidence of plagiarism or cheating:

- Material taken from another source without any or adequate citation.
- Identical or unusually similar answers being turned in by two or more students.
- Written answers or solutions that a student is unable to logically explain verbally.
- Other evidence of collaboration between students on an in-class or take home assignment that was intended to reflect individual effort.
Since this is such an important matter, if you have any questions about this course policy, you should ask me for any clarification that you may need.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings Due</th>
<th>Homework Due</th>
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| January 20 | - Course Overview  
- Models, what are they and why do we use them? Types, uses and cautions.  

Kelley and Lemke, 2013 | Problem Set 1. Memos and Administrative Models |
| February 3 | - Probability Models – Intro to Probability  

| February 10 | Decision Trees | Stokey and Zeckhauser Ch. 12 | Problem Set 2: Probability |
| February 24 | Decision Trees (Continued) | | |
| March 2 | - Decisions with Multiple Criteria (MAU Models)  

March 9 | Evaluating - Change over Time – understanding growth, inflation, constant dollars, % change, exponential growth… Review for Midterm Exam  

| March 23 | Midterm EXAM | | |
| March 30 | Finish Linear Optimization and Start Difference Equations | Stokey and Zeckhauser, Ch. 4 | |
| April 6 | Introduction to System Dynamics and Simulation | Sterman, Ch. 5  
Richardson & Pugh | PS 5 – Difference Equations |
<p>| April 13 | Simulating a Simple Population Modeling the World, World 3 – Class exercise | Senge, Ch. 4 and Ch. 5 | PS 6 – System Dynamics |</p>
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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reference</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>April 20</td>
<td>System Dynamics Archetypes Markov Models</td>
<td>Braun, 2002 Gupta, Chapter 6</td>
<td>PS7 – system archetypes &amp; Vensim</td>
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<tr>
<td>April 27</td>
<td>Equity Analysis – What is a fair distribution? Equity over time…is it getting better or worse?</td>
<td>Berne and Stiefel, 1993</td>
<td>Problem Set 8 – Dynamic Models</td>
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<td>May 4</td>
<td>-Databases, Web-based Information-data access tools.</td>
<td>Bardach, 2000</td>
<td>PS9 – equity analysis</td>
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<td>-Data Analysis: Quantitative Analysis and Simple Relationships-</td>
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<td>-Framing the Policy Process</td>
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<td>-Wrap Up and Review for Final Exam.</td>
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<tr>
<td>May 11</td>
<td>Final Exam – Due by 7:45 PM</td>
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<td>Final Exam Submission</td>
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The schedule above is tentative and may change depending on the flow of the class.