RPAD 204—Computer Modeling for Decision Support
Fall 2002

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Catalogue description.
This course introduces computer-based tools for planning, policy analysis, and decision-making activities. Topics include administrative and policy models in spreadsheets, making decisions with multiple criteria, forecasting and simulation, data base construction and information management, and an introduction to probability and decision trees**.**

Assumed Prerequisites.
This course assumes that you have basic familiarity with microcomputers, and spreadsheet software such as MS-EXCEL. The first problem set is a hands-on diagnostic exercise designed to give you information on whether or not you meet this prerequisite. A series of special laboratory sessions have been scheduled for the first two weeks of class for students who wish to polish up their micro-computing skills.

Purposes.
Computer Modeling for Decision Support 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 especially electronic spreadsheets, databases, communications, and an introduction to the worldwide web.
- To develop sophistication in the application of computer-based tools to the tasks of public administration, including planning, policy analysis, and decision making.
- To gain the skills and insights necessary to manage information resources in a public or not-for-profit agency including elements of database management and networked information transfer.

Required Texts and Material
1. Stokey and Zeckhauser, *A Primer for Policy Analysis*, W.W. Norton
2. Rethemeyer and Andersen, *Case Studies, Problem Sets, and Computing and Networking Worksheets* packet is available on line. The URL for the Course Packet is

http:www.albany.edu/~im7797/DAPS/overview.html

Electronic Reserve Readings

A number of the class readings will be available through the University at Albany's electronic reserve system. The electronic reserve system may be accessed from the library's home page.

Recommended Software
Micro-Soft Office Professional (Word, Excel, and Access--PowerPoint is also useful)

Syllabus of Topics
The attached syllabus of topics shows the timing of the major topics in the class along with anticipated assignments. There are eleven problem sets in the class as well as several telecommunications and networking worksheets, readings, and case studies that fit into this schedule. I have included my present best guesses of what you will need in the materials available on the class website. Since this course is always undergoing some "redesign", I may be handing out assignment modifications each week as we go along. If there are significant changes, I will place an updated syllabus on the class website.

Assignments
Weekly assignments are due at the next class. Assignments include readings in the required and optional texts plus problem sets, telecommunications and networking worksheets, and case studies. The assignments are a place to develop understandings and skills. Unless specifically stated otherwise (such as a take-home assignment associated with the mid-term), **you are encouraged to work on assignments in small groups and to help each other acquire skills and understanding**. I will read the work you hand in, comment on it as time permits, and record the assignments that were handed in on time. However, problem sets and worksheets will not be graded. Typically, case studies will be graded.

E-Mail Communication
To reach me, use my personal e-mail address. A class listserv is being set up with the address pad204@listserv.albany.edu. Please register for this list as soon as possible and keep posted to it for class news and information. Also, use this listserv for sharing common concerns and issues.

Laboratory Sessions.
As discussed under the prerequisite section above, special labs are being scheduled during the first several weeks of class. In addition, regular lab sessions have been scheduled for Tuesday evening between 3:45 and 5:15 PM where you can get help on the assignments**. Additional lab sessions will be planned in the first weeks of class and announced later.** Attendance at labs is optional, but they are the place where most computer hardware/software questions will be answered and where help on homework and concepts will be available. If one or several of the lab sessions become over crowded, we may have to return to the practice of having a specific assigned lab time (we will try to avoid this).

Exams and Grading
Grading is based on the following weights

Midterm Exam	30%
Final Exam	35%
On Time Problem Sets and Worksheets	25%
Graded Cases	10%

Plus instructor judgment relating to class participation.

Time Commitment for this course

This is a three-credit course. Hence you should plan on spending three hours per week in class and in the lab plus approximately eight hours per week doing the reading and preparing problem sets, worksheets, and cases. Students with strong prior background or experience in computing may spend less time than this. Students with little prior background may have to spend more time than this, especially in the first several weeks. If you discover that you are spending more time than this on the course, please let me know so that we can discuss it.

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, some work such as in-class or take-home exam assignments will be clearly expected to reflect 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 purposes of this course, the following are taken as evidence of plagiarism or cheating:

- Material reproduced from another source without any or adequate citation.
- Identical answers being turned in by two or more students.
- A pattern of unusually similar answers being turned in by two or more students.
- Written answers or solutions that a student cannot 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.

RPAD 204 Computer Modeling for Decision Support
Detailed Listing of Assignments—Fall 2002

Week ending:	Topic	Readings Due	Written Work Due[1]
September 5	Overview, expectations and logistics. Software. Introduction **(Software Labs This Week)**	• None	• None
September 12	Overview, expectations and logistics. Software. Intro. Probability **(Software Labs This Week)**	• None	• None
September 19	Introduction to Spreadsheets Probability. Decision trees—Part I **(Software Labs This Week)**	• Stokey & Zeckhauser, Chaps 1-3 & Chap. 12 • Moore and McCabe 4.1 and 4.4	• Worksheet: Connecting to the Network • Worksheet: E-Mail • Worksheet: Creating a Memo Based on Spreadsheet Data
September 26 October 3	• . Decision trees—Part II • Administrative Models in Spreadsheets • **(Software Labs This Week)** Introduction to Difference Equations	• Optional manuals for problem set 1 • CTG, Government Services on the Web • Stokey & Zeckhauser, Chapter 4 • Optional your manual for problem set 2.	• Problem Set 12: Probability, expected values and decision trees.—Part I • Worksheet: Subscribing to Listserv • **Automatic Extension for Worksheets Granted until this date—not beyond.** • Problem Set Basic Spresdsheet Models. • Problem Set 12: Probability, expected values and decision trees.—Part II
October 10	Introduction to System Dynamics	• Stokey & Zeckhauser, Chap 4 & 6 • Readings for problem set 3. • Senge, Chapters 4 & 5 • Richardson	• Problem Set: Adminstrative Models • Problem Set : Difference equation models
October 17	Linear systems, matrix notation, and Markov chains.	• Stokey & Zeckhauser, Chap 7 • Roberts et al: Chapter 3 (reading causal loops)	• .Problem Set: Intorduction to System Dynamics • Case Study 1--Executive Memos
October 24	• Review for Midterm and **Midterm Hour Quiz***	•	• Problem Set Linear Systems and Markov Chains
October 31	Introduction to Vensim • Simulation Games and Learning Environments Introduction to Government Information Management • Networks, the Internet, and Public Administration • Introduction to Data bases	• Vensim Manual • Andersen and Dawes, Chaps. 1 & 2 •	•

[1] Approximate Only. Not all of the exercises in each problem set will be assigned. Details concerning which exercises are due each week will be given in class the previous week.

Date	Topic	Readings Due	Written Work Due[2]
November 7	• Data base design. Information management. • Discuss VOODS Case in Class	• Andersen and Dawes, Chaps. 3 & 4 &VOODS Case Study • Readings for prob. set 8.	• Vensim Assignment (Not in Packet) • Worksheet Downloading, E-Mail, Intro. to Databases (version 2) • Problem Set Single Table Databases • VOODS case study (prep for discussion).
November 14 NB APPAM meetings on this day	• Data models, multi-table databases, normal form • Discuss Forensic Mental Health Case	• Andersen and Dawes, Forensic Mental Case • Huxhold • Litwin	• Problem Set: Databases and Introduction to Data Modeling • Forensic Mental Health Case Study (prep to discuss).
November 21	Decision analysis in spreadsheets: MAU models	• Stokey & Zeckhauser Chap. 8. • Reagan-Cirincions, Schuman, and Richardson • Barron and Barrett	• Problem Set: Databases, Data Models, and Normalization •
November 28	THANKSGIVING	•	•
December 5	Exploratory optimization Formal models in administration & policy	• Stokey & Zeckhauser, Chap 11 • Readings for problem set 5. • Course wrap-up Outline in Packet • Stokey & Zeckhauser. Chaps. 13,15	• Problem Set Decision Making with MAU Models • Case Study 2--Information Mgmt write-up • Problem Set 6: Exploratory Optimization/Linear Programming
December 12	*Final Exam	• Everything	• Take Home Portion of Final Due

Readings on the Class Web Site

- Andersen & Dawes, *Government Information Management: A primer and casebook* (cases in packet; text on reserve)
- Huxhold, "Data-Base Structures", *from An Introduction to Urban Geographic Information Systems*
- Reagan-Cirincione, Schuman & Richardson" Decision Modeling: Tools for Strategic Thinking" from *Interfaces*
- Elmasri and Navathe, "Entity-Relationship (ER) Diagrams" in *Fundamentals of Database Systems.*
- Richardson, *Introduction to System Dynamics Modeling,* pp.
- Barron and Barrett, "Decision Quality Using Ranked Attribute Weights"
- Litwin*, Fundamentals of Relational Database Design*

Readings on Reserve with E-Res

- Andersen & Dawes, *Government Information Management, A Primer and Casebook*, (text on reserve; cases in packet)
- Moore and McCabe, *Introduction to the Practice of Statistics (2nd edition)*
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- Elmasri and Navathe, *Fundamentals of Database Systems*, Chapter 3.
- Tufte, *The Visual Display of Quantitative Information*
- Senge, *The Fifth Discipline*
- Richardson, *Introduction to System Dynamics Modeling using DYNAMO*
- Roberts et al. *Introduction to Computer Simulation,* Chapter 3—How to Read Causal Loop Diagrams
- **See Additional Readings that are on Electronic Reserve**

[2] Approximate Only. Not all of the exercises in each problem set will be assigned. Details concerning which exercises are due each week will be given in class the previous week.