

PAD/PDD/UST 601. Applied Quantitative Reasoning

Spring Semester 2005

Meeting Time: Wednesday, 6:00 p.m. to 9:50 p.m.
Room: MC 427

Instructor: George Weiner, PhD
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Office Hours: T, W, Th, 4:00 to 5:30 p.m., or by appointment
Computer Lab: see <http://urban.csuohio.edu/tech/facilities/labs/>

Description: Decision making for planning, management, and policy formulation relies increasingly on quantitative reasoning, which entails the collection, analysis and interpretation of data. *Applied Quantitative Reasoning I* provides some key tools for quantitative analysis, reasoning, and decision-making.

This course will introduce students to the logic of quantitative analysis, and to principles and techniques that support data-driven decision-making. It will introduce basic techniques for data description, and univariate and multivariate statistical analysis, and will include use of spreadsheet, statistical, and presentation software.

Objectives: Students should learn to:

- identify types of problems that lend themselves to quantitative analysis;
- ask questions that can be answered through quantitative reasoning;
- formulate hypotheses to be tested quantitatively;
- identify the appropriate procedures to test the hypotheses;
- carry out analyses, understand the meaning of results and reapply results to the initial or similar problems;
- present and clarify results for specified audiences;
- evaluate results of research carried out and reported by others;
- apply the new knowledge to decision-making.

- Method:** The course consists of:
- lectures on quantitative methods and techniques for data description, analysis, and presentation;
 - discussion of home assignments;
 - occasional in-class exercises; and
 - computer lab work using Excel (or other spreadsheets), SPSS, and PowerPoint.
- Good Advice:** Assignments should be handed in on time. As in your current or future professional work, pay attention to correctness, completeness, and clarity. Your grade will be based on the soundness of your analytic thinking, interpretation of your findings, and communication of results.
- Attendance is encouraged, but not required. Keep in mind, however, that exams may cover material from lectures that is not in the text. Also, class participation counts for part of your final grade.
- Prepare for class by completing assigned reading and problems. Identify topics that need clarification, and feel free to ask questions if there's something that you don't understand.
- Grading:** Two Midterms: 20 percent each
Final: 30 percent
NB: Your best grade of the three will count an additional 15 percent, and your next best grade an additional 5 percent
Computer exercises, home assignments, and class participation: 10 percent
- A = 90 points and above
B = 80-89
C = 70-79
D = 60-69
F = below 60 points
- Required Text:** Kachigan S. (1982). Statistical Analysis: An Interdisciplinary Introduction to Univariate and Multivariate Methods. New York: Radius Press, 1986.
- The following references are free of cost and one will be distributed to each of you in class:
- Marountas, Richard, et al, *Social Indicators Project: Education, Employment, and Income*, Federation for Community Planning, Cleveland, OH.
- Lenahan, Terry, et al, *Social Indicators Project: Families and Children*, Federation for Community Planning, Cleveland, OH.
- Malakar, Lucy, et al, *Social Indicators Project: Community Health*, Federation for Community Planning, Cleveland, OH.

CLASS POLICIES

- Extra Credit:** There is no “extra credit” in this class, so please don’t ask. I will determine your grade solely on exams, computer exercises, home assignments, and class participation.
- Missed Exams:** Only in cases of documented illness or other extreme circumstances will I give make-up exams. You must make these arrangements in advance of the exam, and you must schedule the make-up exam within 7 days of the in-class exam. The make-up exam may vary in form, content, and length from that given in class. Except in these rare circumstances, students earn a score of zero on missed exams.
- Late Work:** As homework solutions will be discussed at the beginning of class, late homework is not accepted. In the absence documented illness or extreme circumstances, due dates and times are final.
You earn a grade of zero for all homework not handed in by the beginning of class.
- Written Work:** Use the computer as frequently as possible for solving home assignments and always for text editing. Spell-check and proofread everything you hand in (note that these are different). Critically review all of your work for correctness, completeness and clarity.
All work must be handed in as a “hard-copy.” No e-mail, e-mail attachments, faxes, etc. All work must be handed in at the beginning of class on the date due, or earlier at my office.

UNIVERSITY POLICIES

- Academic Misconduct:** All the work that you hand in must represent your own independent effort. Familiarize yourself with the various forms of academic misconduct in the CSU Student Handbook, available at http://www.csuohio.edu:80/student-life/student_handbook/. Any form of academic misconduct will earn a grade of F for the course.
- Incomplete:** ”The grade of Incomplete (I) is given when the work in a course has been generally passing, but when some specifically required task has not been completed through no fault of the student (Cleveland State Student Handbook, http://www.csuohio.edu:80/student-life/student_handbook/Section 3.1.5).”
- Grade Changes:** Except for removal of “incomplete,” grades cannot be changed after they are issued at the end of the semester.

- Add/Drop:** Check the CSU Registrar's website for the last date for dropping this course: <http://www.csuohio.edu/registrar/calendar.html>.
- Weather:** Class will only be cancelled due to weather if the University is closed. CSU determines if evening classes will be held by 2 p.m. daily. Check www.csuohio.edu/csu_snow/, or call 687-2000. If CSU is open, class will proceed as scheduled, including any exams or deadlines that are scheduled for that class.
- Special Needs:** Anyone anticipating the need for special accommodations to take exams, complete assignments, or otherwise fully participate in this class must identify himself or herself to the instructor as soon as possible.

Some useful websites:

AHA Data Forum [<http://www.ahadata.com/>]
Annie E. Casey Foundation [<http://www.aecf.org>]
Bureau of Labor Statistics, US Department of Labor [<http://www.us.gov/>]
Census Bureau, US Department of Commerce [<http://www.census.gov/>]
The Center for Community Solutions [<http://www.communitysolutions.com/>]
Center on Urban Poverty and Social Change [<http://povertycenter.cwru.edu/>]
Centers for Disease Control and Prevention [<http://www.cdc.gov/>]
Centers for Medicare and Medicaid Services [<http://www.cms.hhs.gov/>]
Forum on Child and Family Statistics [<http://www.childstats.gov/>]
Health Resources and Services Administration, USDHHS [<http://www.hrsa.gov/>]
Healthy People 2010 [<http://www.healthypeople.gov/>]
The Henry J. Kaiser Foundation [<http://www.statehealthfacts.kff.org/>]
National Center for Health Statistics [<http://www.cdc.gov/nchs/default.htm>]
Northern Ohio Data and Information Service [<http://nodisnet1.csuohio.edu/nodis/>]
Ohio Department of Health [<http://www.odh.state.oh.us/>]
Ohio Department of Job and Family Services [<http://jfs.ohio.gov/>]
Ohio Department of Mental Health [<http://www.mh.state.oh.us/>]

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	date	topic	reading	assignment due
1	Jan 19	introduction, class organization, course content	chapters 1, 2	
2	Jan 26	data reduction: frequency distributions, central tendency	chapters 3, 4	1: 1, 2, 3, 4, 5, 6, 7, 12 2: 1a,b, 2 (pick any five), 3, 4, 5, 6 (use the same five as in 2), 7, 13, 19, 20 Internet and Excel exercise: TBA
3	Feb 2	data reduction: variation	chapter 5	3: 1a,b,d, 2, 3, 5, 6, 12, 14, 16 4: 2, 3, 6, 7, 8, 10, 11, 15, 16, 19 Excel exercise: TBA
4	Feb 9	probability basics	chapters 6	5: 1-7, 11, 27-32 Excel exercise: TBA
5	Feb 16	midterm 1	chapters 1-5	
6	Feb 23	inference: sampling distributions	chapters 7	6: 2, 4, 8, 9, 16-21 Excel exercise: TBA
7	Mar 2	inference: parameter estimation	chapter 8	7: 5,7,9,10,11,12,16,18,23,35,39 Excel and SPSS exercises: TBA
8	Mar 9	inference: hypothesis testing	chapter 9	8: 1-4, 8, 10, 15, 20 Excel and SPSS exercises: TBA
	Mar 16	Spring Recess		

	date	topic	reading	assignment due
9	Mar 23	association: correlation analysis	chapter 10	9: 1,2,4,5,7,8,12,17,20,24,25 SPSS exercise: TBA
10	Mar 30	midterm 2	chapters 6-9	
11	Apr 6	association: regression analysis	chapters 10-11	10: 1, 2, 4 (by hand), 5 (use SPSS to solve), 7, 9, 10, 14, 17, 28 SPSS exercise: TBA
12	Apr 13	association: regression analysis	chapter 11	11a: 2, 3, 4, 5, 7 (by hand), 8, 10 (SPSS), 12, 13, 15 SPSS exercise: TBA
13	Apr 20	association: categorical data	chapter 13	11b: 16, 17, 18, 22, 25, 28 SPSS exercise: TBA
14	Apr 27	selected topics: time series analysis	chapter 18	13: 1, 7, 11, 16, 17 SPSS and Excel exercise: TBA
15	May 4	selected topics: decision analysis	chapter 21	18: 1, 3, 4, 9, 19, 15 21: 1, 2, 4, 5, 7, 10, 13, 20 SPSS and Excel exercise: TBA
	May 11	final exam	chapters 1-11, 13, 18, and 21	