

ECON103/SOC190-2 (Spring 2009)
Introduction to Probability and Statistical Methods

Lecturer: Professor Joe Swingle (x3841)
Office hours: Tuesdays 2:40-4:00, Thursdays 1:30-4:00

Class Schedule:

Lectures:	TF	1:30-2:40	PNW 212	
Alt mtgs:	W	2:15-3:25	PNW 212	
Lab 2A:	W	9:50-11:00	PNE 130	TA = Katherine-Sooah Cho
Lab 2B:	W	11:10-12:20	PNE 130	TA = Kristin Y. Shiue

This course introduces students to statistical methods and their applications in social science and public policy. Knowledge of basic probability theory is necessary to accomplish this goal and its instruction is an integral part of this course. The course will be divided into four main sections. Initially we will cover descriptive statistics, including summary measures and the graphical display of data. The second section covers probability theory that forms the basis of statistical inference. The third section covers sampling, estimation, and inference. The final two weeks of the course will provide an overview of crosstabulation and a brief introduction to regression analysis.

Required text: Doane, David P. and Lori E. Seward. *Applied Statistics in Business & Economics* (2nd edition). Boston: McGraw-Hill Irwin. 2009. Students studying probability and statistics often find it beneficial to skim the appropriate chapters before coming to lecture and then to read the chapters more carefully after I have lectured on the material covered in those chapters.

Course Requirements and Weights for Final Grade: The final grade will be based on the following requirements:

Problem sets	15% total
2 midterm exams	50% (25% each)
Final exam (cumulative)	35%
Total	100%

Problem Sets: Problem sets are an integral part of the course. Some of you may find it useful to work on problem sets together and to study in small teams (2-3 students per team is ideal). That is perfectly acceptable but each student must turn in her own problem set. Since written solutions will be distributed on the due date, **NO LATE PROBLEM SETS WILL BE ACCEPTED**. Computer difficulties should be expected and factored into the time allotted to complete the exercises.

Exams: The two midterm exams will be closed book and taken in class on March 11th and April 22nd. **ANY CONFLICTS WITH THESE EXAM DATES MAY BE RESOLVED BY TAKING THE EXAM EARLIER THAN SCHEDULED, NOT LATER**. Exams are designed to see how well you can apply the fundamental problem solving skills developed on the problem sets. The exams in this course **DO NOT** simply modify the same questions you have done on problem sets. A formula page will be provided for all exams.

Attendance: Attendance is expected for all lectures and lab meetings. Labs are a vital component of this course and will be used to reinforce lecture material, to provide “hands on” experience with problem solving, and to introduce Excel as a tool for learning statistics and perhaps for landing a job some day.

General comment: The only way to learn statistics is to work problems. Simply completing the problems on the problem sets is not enough – you should do as many of the exercises in the textbook as you can. Solutions for the odd-numbered exercises are in the back of the text. If you want to check an answer or if you are not sure how to solve a particular unassigned problem, please feel free to ask about the relevant problem during my office hours or one of the TA’s office hours.

Class schedule:

Mon	Tue	Wed	Thu	Fri	Reading:
FEB 2	3 Course introduction	4	5	6 Types of data	1.1 - 1.4, 1.6 1.5 (skim) 2.1 - 2.3, 2.6
9	10 Graphing	11 Lab 1: Graphing	12	13 Descriptive Stats Pset 1a due 1:30p	Ch. 3 (all) 4.1 - 4.2
16	17 Descriptive Stats	18 Lab 2: Excel functions (1)	19	20 Covar / Correl Pset 1b due 1:30p	4.3 - 4.8
23	24 Probability	25 Lab 3: Excel functions (2) a/t: Probability	26	27 Probability Pset 2 due 1:30p	5.1 - 5.6, 5.8
MAR 2	3 Probability - Bayes	4 Lab 4: Prob simulations	5	6 Loose ends / exam review Pset 3 due 1:30p	5.7 Paulos pp. 72 - 73
9	10 Discrete RVs	11 MIDTERM 1	12	13 Discrete RVs	6.1 - 6.6
16	17 Props of $E(X)$, $var(X)$	18 Lab 5: Proof by Excel	19	20 Continuous RVs Pset 4 due 1:30p	6.8 Newbold - Joint distribs 7.1 - 7.2
23	24	25	26	27	
SPRING BREAK (March 21 - March 29)					
30	31 Normal Distribution	APR 1 Lab 6: Continuous RVs a/t: Normal Distrib	2	3 Sampling distributions Pset 5 due 1:30p	7.3 - 7.7 Paulos pp. 59 - 62 8.1 - 8.2
6	7 Estimation / Estimators	8 Lab 7: Sampling distribs	9	10 Confidence Intervals (CIs) Pset 6 due 1:30p	8.3 - 8.6 Paulos pp. 178 - 180 Newbold ("Estimators")
13	14 CIs and Hyp Testing	15 Lab 8: Hyp Testing a/t: CIs and Hyp Tests	16	17 Hyp Testing: t -dist Pset 7 due 1:30p	8.7 - 8.8 9.1 - 9.5
20	21 (No class - Mon schedule)	22 MIDTERM 2	23	24 Hyp test: 2 means	8.9 - 8.10 10.1 - 10.3
27	28 Hyp test: 2 proportions	29 RUHLMAN	30	MAY 1 Crosstabulation	10.4 15.1
4	5 Goodness of Fit	6 Lab 9: Pivot tables a/t: Regression	7	8 Regression Pset 8 due 1:30p	15.2 - 15.5 12.2 - 12.3
11	12 Regression	13 Lab 10: Regression	14 Reading Period Pset 9 due 1:30p	15 Reading Period	12.4 - 12.6 13.1 "Regression Obsession" (ER)
EXAMS	EXAMS	EXAMS	EXAMS	EXAMS	
25	26	27	28 Senior grades due 12p (all others: 6/8 by 4:30p)	29	