

22s:039: SCA
Probability and Statistics for
Engineering and Physical Sciences
Spring 2008

Instructor: Prof. Osnat Stramer 372 SH, 335-3182

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Dept. of Statistics & Actuarial Science, 241 SH, 335-0712. Prof. Luke Tierney, Chair

Office hours: Monday 3:30-5:00, Wednesday 3:45-5:00 p.m. or by appointment.

Time & Location: 6:00P - 9:00P W 30 SH.

ICON: [http:// icon.uiowa.edu/](http://icon.uiowa.edu/)

Log in using your Hawk ID and Hawk ID password.

Required Text – Navidi, Statistics for Engineers and Scientists, 2nd ed (McGraw-Hill) 0073309491. For practice quizzes, text data sets and more go to www.mhhe.com/navidi2

Additional References

- Probability and Statistics for Engineering and the Sciences, by Jay L. Devore.
- Probability and Statistics for Engineers and Scientists, by R.E. Walpole, R.H. Myers, and S.L. Myers, Prentice-Hall.
- Applied Statistics and Probability for Engineers, Montgomery & Runger

Lectures & Worksheets: Please bring your text-book to classes. We will also use worksheets.

Tutorial lab: Extra help is available at the Statistics Tutorial Lab. See

<http://www.stat.uiowa.edu/courses/tutorial-lab.html>

Software: Minitab: available in all Instructional Technology Center (ITCs) such as 41 SH. If you would like to get your own copy, visit <http://www.minitab.com> for information regarding the academic version and per term leasing on your own computer.

Assignments: Assignments will be given each Wed. on Icon and be collected the following Wed. Solutions to homework problems will be posted on Monday.

Attendance: If you miss class, you are responsible for understanding the material covered in class and all announcements made in class. The lecture will not be repeated during office hours.

Homework Quizzes: short quizzes that are based on homework problems will be given almost every Wednesday.

Quizzes: A few announced quizzes will be given.

EXAMS:

Exam 1	Thursday, February 28	5:00-6:30 P.M.
Exam 2	Thursday, April 10	5:00-6:30 P.M.
Final	Monday, May 12	7:00-9:00 P.M.

- For both midterm exams, students are allowed one 8.5 x 11” formula sheet (front side only). For the Final Exam, students are allowed an additional side of an 8.5 x 11” formula sheet. Scientific calculators are allowed.
- Make-up/alternate date exam: No make-up exams will be given unless you provide a valid excuse (e.g. medical certificate or equivalent). If you miss an exam, your score for that exam will be 0.
- The final exam will cover all the material taught in the course.

GRADING:

Homework quizzes	10%
Participation	5%
Quizzes	15%
Each midterm	20%
FINAL EXAM	30%

As a rough guide: 90-100% = A, 80-90% = B, 70-80% = C, 55-70% = D

COURSE SYLLABUS

(Approximate)

Chapter 1: Sampling and Descriptive Statistics	Week 1
Sections 1.1-1.3	
1.1 Sampling	
1.2 Summary Statistics	
1.3 Graphical Summaries	
Chapter 2: Probability	Week 2 - Week 4
Sections 2.1-2.6	
2.1 Basic Ideas	
2.2 Counting methods	
2.3 Conditional Probability and Independence	
2.4 Random Variables	
2.5 Linear Functions of Random Variables	
2.6 Jointly Distributed Random Variables (discrete case only)	
Chapter 4: Commonly Used Distributions	Week 5 - Week 7
Sections 4.1-4.3, 4.5, 4.9, 4.10	
4.1 The Bernoulli Distribution	
4.2 The Binomial Distribution	
4.3 The Poisson Distribution	
4.5 The Normal Distribution	
4.7 The Exponential Distribution	
4.11 The Central Limit Theorem	
Chapter 5: Confidence Intervals	Week 8 - Week 9
Sections 5.1-5.7	
5.1 Large-Sample Confidence Intervals for a Population Mean	
5.2 Confidence Intervals for Proportions	
5.3 Small-Sample Confidence Intervals for a Population Mean	
5.4 Confidence Intervals for the Difference between Two Means	

- 5.5 Confidence Intervals for the Difference between Two Proportions
- 5.6 Small-Sample Confidence Intervals for the Difference between Two Means
- 5.7 Confidence Intervals with Paired Data

Chapter 6: Hypothesis Testing

Sections 6.1-6.8

Week 10 - Week 12

- 6.1 Large-Sample Tests for a Population Mean
- 6.2 Drawing Conclusions from the Results of Hypothesis Tests
- 6.3 Tests for a Population Proportion
- 6.4 Small-Sample Tests for a Population Mean
- 6.5 Large-Sample Tests for the Difference between Two Means
- 6.6 Tests for the Difference between Two Proportions
- 6.7 Small-Sample Tests for the Difference between Two Means
- 6.8 Tests with Paired Data

Chapter 7: Correlation and Simple Linear Regression

Sections 7.1-7.4

Week 13 - Week 14

- 7.1 Correlation
- 7.2 The Least-Squares Line
- 7.3 Uncertainties in the Least-Squares Coefficients
- 7.4 Checking Assumptions and Transforming Data

REVIEW

Week 15

Course Policies

Course attendance: Students are responsible for all material covered in the lectures.

E-mail Account: Every student in the class is required to check his/her UIowa e-mail often (every other day.)

The College of Liberal Arts and Sciences Policy and Procedures

Academic Fraud

Plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and then to the Associate Dean for Academic Programs and Services in the College of Liberal Arts and Sciences. www.clas.uiowa.edu/students/academic_handbook/ix.shtml

Making a Suggestion or a Complaint

Students have the right to make suggestions or complaints and should first visit with the instructor, then with the course supervisor if appropriate, and next with the departmental DEO. All complaints must be made within six months of the incident. www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Accommodations for Disabilities

A student seeking academic accommodations first must register with Student Disability Services and then meet with a SDS counselor who determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to arrange particular accommodations. www.uiowa.edu/~sds/

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of

students, faculty, and staff. Visit www.sexualharassment.uiowa.edu/ for definitions, assistance, and the full policy.

Administrative Home of the Course

The administrative home of this course is the College of Liberal Arts and Sciences, which governs academic matters relating to the course such as the add / drop deadlines, the second-grade-only option, issues concerning academic fraud or academic probation, and how credits are applied for various CLAS requirements. Please keep in mind that different colleges might have different policies. If you have questions about these or other CLAS policies, visit your academic advisor or 120 Schaeffer Hall and speak with the staff. The CLAS Academic Handbook is another useful source of information on CLAS academic policy:

www.clas.uiowa.edu/students/academic_handbook/index.shtml