

Statistics I

TENTATIVE COURSE OUTLINE

WEEK	DATES	TOPIC	READING ¹
1	3/31-4/4	Course introduction and what is statistics Review of probability	Chapter 1 Chapter 2
2	4/7-11	Review of probability Data summary and representation	Chapter 2 Chapters 3 and 4
3	4/14-18	Data summary and representation	Chapters 3 and 4
4	4/21-25	Statistical inference, confidence intervals and hypothesis testing	Chapter 6
5	4/28-5/2	Inference for single samples	Chapter 7
	5/5	Quiz	
6	5/5-9	Inference for two samples	Chapter 8
7	5/12-16	Inference for proportions	Chapter 9
8	5/19-23	Linear regression and correlation	Chapter 10
9	5/26-30	Multiple regression	Chapter 11
	5/26	No class – Memorial Day	
10	6/2-6	Introduction to experimental design	Chapter 13
	6/10	TUESDAY – FINAL EXAM (9-11 a.m.)	

¹ All readings are from Tamhane, A. C. and D. D. Dunlop, 2000, Statistics and Data Analysis: from Elementary to Intermediate, Prentice Hall, Upper Saddle River, NJ.

INSTRUCTOR

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Daskin

office hours: M W, 3-5 **or any other time** by appointment. I am serious about the **any other time** part. It is quite possible that these hours will not be convenient for some of you, so please just send me an e-mail to set up an appointment if you need/want to see me!

TA

Office hours: TBA.

TA

TBA

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REQUIRED TEXTBOOK

All material for the course will be from:

Tamhane, A. C. and D. D. Dunlop, 2000, Statistics and Data Analysis: from Elementary to Intermediate, Prentice Hall, Upper Saddle River, NJ.

GRADING

Students will be evaluated on five components of the course:

- Homework 25%
- Quiz 15%
- Labs 15%
- Final Exam 25%
- Project 20%

HOMEWORK

There will be approximately 7-9 homework assignments. They will be due **IN CLASS** on Friday. There will be **NO CREDIT** given for late homework. Homework will not be graded in detail since solutions will be distributed in class (the Friday that the assignment is due).

Each question will be graded out of 4 units. You will get:

- 4 for correct solutions with work shown
- 3 for solutions with minor mistakes, i.e. computational, etc.
- 2 for correct solutions with no work shown, or for partially correct solutions with work shown.
- 1 for incorrect solutions
- 0 if no attempt is made

QUIZ AND FINAL EXAM

There will be one 1-hour quiz. It is scheduled for **May 5** as shown above in the **tentative course outline**. It will be an in-class exam. The final exam is scheduled for **Tuesday, June 10 from 9-11 a.m.**

The quiz is a closed book exam. For the quiz you can prepare a **two page** summary sheet of information to bring to the quiz. The final exam will be open book, open notes, etc. You should probably prepare a summary sheet for the final as well since doing so is a great way to study for the exam. **Each exam is cumulative** though the final will tend to focus more on the most recent material.

LABS

There will be 2-3 laboratories. For each lab, there will be a required project report. All labs are to be done in teams of 4 and teams will need to sign up for 1.5 hour lab times in MEAS C125 for each lab. Be sure to sign up early since you will need some time after collecting the data to write up your report.

PROJECT

For the project, you will be working in the same teams of 4 as you did for the labs. You are to choose a research question, formulate it as a hypothesis testing or estimation problem, collect the necessary data from existing sources or by doing a small survey or experiment, analyze the data using statistical techniques discussed in class, and write a report that is not to exceed 10 double spaced pages of text (excluding any appendices). You should be sure to discuss any shortcomings of the data such as measurement errors and bias and how they might affect the results.

A project proposal is due by April 16. This should not exceed 1 double spaced page.

The final project is due on Friday, June 6, at 10 a.m.

Examples of **previous** projects include:

- A comparison of the absorbency and strength of two different paper towel products and a study of the cost-effectiveness of each product.
- An analysis of housing costs in Boston as a function of various demographic and socio-economic data.
- A study of whether or not weight affected the times for competitors in the Olympic bobsled competition.
- An analysis of infant mortality rates in various countries as a function of socio-economic data (e.g., per capita income, doctors per capita, etc.).
- A taste-test comparison of 7-up versus sprite
- A comparison of gasoline prices in the Chicago suburbs versus Chicago proper
- An analysis of the “sophomore slump” in the NBA
- An analysis of housing sales versus the Federal Funds rate
- An analysis of various NFL team statistics versus the team won/lost record
- A test of laptop battery lives
- An analysis of national highway safety versus macro-economic indicators
- An analysis of dumbbell weights at SPAC
- A statistical analysis of baseball team records versus salaries

You should generally avoid projects that involve getting academic information from NU (e.g. studies of SAT or GPA scores) since this information will generally NOT be available to you.

LAB AND PROJECT GROUPS

Please hand in the names of the individuals you want to have in your group (4 people to a group) by **Friday, January 10**. **I reserve the right to reassign students to different groups.**

AVAILABILITY OF MINITAB AND EXCEL

MINITAB and EXCEL are available in the IE/MS Computing Lab in Tech C135.

ACADEMIC HONESTY

The term project and the labs submitted for credit in this course must be sent as e-mail attachments as well as delivered in printed form. Your written work may be electronically tested for plagiarized content.

ATTENDANCE POLICY

Past experience has shown that students who attend class *regularly* and *on time* do significantly better in the course. To encourage students to be in class, I will ask you to sign in *before* class on 6-8 randomly chosen dates (which will not be announced in advance).

Students who are in class and on time for all of these sessions or all but one of the sessions will have their course grade increased by one third of a letter grade (e.g., from a B to a B+ or from a B+ to an A-).

NU DISABILITY POLICY

<http://www.northwestern.edu/disability/policies/syllabus.html>

To be eligible for disability-related services; students must have a visibly obvious or documented disability as defined by the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. Under the ADA and Section 504, a person has a disability if he/she has a physical or mental impairment that substantially limits one or more major life activities such as walking, standing, seeing, speaking, hearing, sitting, breathing, and/or taking care of oneself.

SSD is the designated office at Northwestern University that obtains and files disability-related documents, certifies eligibility for services, determines reasonable accommodations, and develops plans for the provision of such accommodations. Students with disabilities are also offered auxiliary services, including assessment, library and lab assistants, notetakers, tutoring, assistive/adaptive technology, academic, psycho/social support, and mentorship.

Certifying Eligibility for Services

When appropriate, SSD requests disability-related documents from the appropriate licensed professional to certify a student as having a disability and to determine reasonable accommodations. Students who suspect that they have a disability, and have not received a formal assessment, may be referred to on-campus (Counseling and Psychological Services, Department of Communication Sciences and Disorders) or off-campus resources for an evaluation. Pending receipt of documentation, SSD reserves the right to deny services or accommodations.