

MATH 453 – Essentials of Statistics Course Syllabus

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Note: This syllabus details the rules and procedures by which this course is to be conducted. You are responsible for reading this syllabus and knowing the contents – enrollment in this course constitutes an acknowledgement of this responsibility and implied consent to these rules and procedures.

Description: An introduction to statistics covering both descriptive and inferential statistics. Among the topics are numerical and graphical summaries for one and two variables, linear regression and correlation, confidence intervals and tests concerning means and proportions. A standard statistical software package is used throughout the course. The emphasis is on applying, interpreting, and explaining statistical methods.

Prerequisites: One course in college mathematics.

Student Learning Outcomes: Upon successful completion of this course, students will:

- Explain the use of data collection and statistics as tools to reach reasonable conclusions.
- Recognize, examine and interpret the basic principles of describing and presenting data.
- Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
- Explain the role of probability in statistics.
- Examine, analyze and compare various sampling distributions for both discrete and continuous random variables.
- Describe and compute confidence intervals.
- Solve linear regression and correlation problems.
- Perform hypothesis testing using statistical methods

Texts: None required. My notes will be sufficient.

Software: We will use the statistical software package StatCrunch (<http://statcrunch.com>), a web-based statistical software package which requires only internet access and a compatible browser to run. Thus, it will run equally well no matter which operating system you use. A 6-month license can be purchased for \$13.20. There is also a beta version of StatCrunch for mobile devices available at <http://www.statcrunch.com/mobile/>. You will need to subscribe before you can access this.

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eCollege: I will get an eCollege coursesite up and running as soon as I am able. All handouts will be posted on the site. I will try where possible to post .pdf files rather than, or in addition to, Office documents. You will need the Adobe Reader (<http://www.adobe.com/>) which is another free download. However, Mac users may have to access Office documents occasionally. There are packages available that enable Mac users to work with Office documents (Office for Mac and OpenOffice come to mind).

Grading: on a standard 100% scale:

- **HW/Activities: 30%**
- **EXAMS: 15% each**
- **FINAL: 25%**

Disputed grades will only be changed if graded assignments are produced which indicate the recorded grade is erroneous.

Exams: There are 3 exams and a cumulative final. There will be no makeup exams. With proper documentation of a valid excuse for missing an exam, the % of your grade due to that exam will be rolled over into the cumulative final; absent such documentation a missed exam counts as a zero. Exams are closed-book, no notes.

Exam schedule:

- **Exam #1**--- TBA
- **Exam #2**--- TBA
- **Exam #3**--- TBA
- **Final** --- TBA

Homework: will be assigned in class. Often these will be in the form of weekly quizzes made available on the eCollege site. Activities will generally be conducted in class.

Attendance/Class Participation/Academic Integrity: Students are expected to attend all lectures in a timely fashion and to participate in classroom and group discussions and activities; therefore no record of attendance is necessary.

ADA Statement: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce, Gee Library, Room 132, Phone (903) 886-5150 or (903) 886-5835, Fax (903) 468-8148, email: StudentDisabilityServices@tamuc.edu

Basic Tenets of Common Decency: "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (Student's Guide Handbook, Policies and Procedures, Conduct.) This means that rude and/or disruptive behavior will not be tolerated.

Tutoring: Services up to the level of Calculus I provided by the Math Skill Center (Binnion Hall Room 328) with the following hours: M and W, 8am–8pm; T and R, 8am–6pm; and F 8am–3pm.

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Calculator Loan Program: we have set up a calculator loan program to support students. They can borrow a calculator for a semester with a fee (\$10-\$15 for TI-83/84). Go to the Math department office.

Tentative Class Schedule:

Week	Topics
1	Introduction and Getting Started/What is Statistics? What is Data? Intro to StatCrunch
2	Sampling and Surveys, Observational Studies and Experimental Design
3	Graphical and numeric summaries of data
4	Scatterplots and Correlation/Simple Linear Regression
5	Discrete Probability – axioms, properties, combinatorics Exam #1
6	Discrete Probability – expectation and variance, conditional probability, Bayes' Rule, independence
7	Continuous Probability – Density Curves
8	Normal Distributions – Empirical rule, z-scores and standardizing, Sampling Distributions/Sampling Distribution of the Sample Mean
9	Spring Break
10	Sampling Distributions/Sampling Distribution of the Sample Mean Exam #2
11	Confidence Intervals for Means and Proportions
12	Hypothesis Tests for One Population Mean
13	Inference for Two Population Means
14	Inference for Two Population Means Exam #3
15	Pearson's Chi-Square Test
16	One-Way ANOVA, review
17	Finals

Final Exam: TBA

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