University of Colorado at Boulder
Department of Economics
Econ 3818-100 - Introduction to Statistics with Computer Applications
Instructor - Paulo Saraiva
Summer 2013

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O ce: Econ 14
Class Meetings: MTWRF 9:15am - 10:50am, Econ 117
O ce Hours: MTWR 10:50am - 12:20pm.

course. Lectures are sequential in this course, so missing class and not studying

Amemiya, T. (1994) *Introduction to Statistics and Econometrics*. Harvard University Press, Cambridge, MA.

Ashenfelter, O., P. Levine & D. Zimmerman (2006) *Statistics and Econometrics: Methods and Applications*. John Wiley & Sons, New York, NY.

Bradley, T. (2007) *Essential Statistics for Economics, Business and Management*. John Wiley & Sons, New York, NY.

Johnson, R. & G.K. Bhattacharyya (2010) *Statistics: Principles & Methods* (6th edition). John Wiley & Sons, New York, NY.

Spanos, A. (1999) *Probability Theory and Statistical Inference: Econometric Modeling with Observational Data*. Cambridge University Press, New York, NY.

Chiang, A. & K. Wainwright (2005) *Fundamental Methods of Mathematical Economics*. McGrall-Hill, New York, NY.

Course outline:

1. Set Theory
    - Unions and Intersections
    - De Morgan's Law
    - Functions
2. Probability
    - Axioms of Probability
    - Combination and Permutation
    - Conditional Probability
    - Independence
    - Bayes Theorem
3. Random Variables
    - Distribution Function
    - Discrete Random Variable and Probability Mass Functions
    - Continuous Random Variables and Density Functions
    - Conditional Distributions
    - Independence of Random Variables
4. Moments and Expectations
    - Mean, Mode and Median

Variance and Standard Deviation

Covariance and Correlation

5. Useful Distributions

   Bernoulli Distribution

   Binomial Distribution

   Poisson Distribution

   Uniform Distribution

   Normal Distribution

   Chi-squared Distribution

   t-Student Distribution

   F Distribution

6. Estimation and Inference

   Method of moments estimator

   Bias, E ciency and Mean Squared Error

   Test Hypothesis

   Interval Estimation

7. Asymptotic Theory (if time permits)

   Convergence in$r$-th mean

   Almost Sure Convergence

   Convergence in Probability

   Convergence in Distribution

   Law of Large Numbers

   Central Limit Theorems

   Hypothesis Testing without the Normality Assumption

Exam Material: Based on the items of the course outline:

Exam	Material
Midterm 1	1 and 2
Midterm 2	3 and 4
Final Exam	5, 6 and 7

Miscellaneous:

Hardware and Software: R will be used for some data analysis. Although not required, there are many excellent R manuals available. R is supported in many of the campus computer labs, including the lab in the basement of the Economics building. R is an open source program which can be downloaded inhttp://cran.r-project.org/ . You may use other softwares, such as Excel, however, I will not cover Excel in this class. In addition to this you will need a calculator for the exams.

Visit http://webdata.colorado.edu/labs/map/ for a list of computer laboratories and available software.

Special accommodations:

Refer to http://www.colorado.edu/disabilityservices .

E-Mail Policy: I will not answer questions about statistics via email. Those emails with questions about statistics will be ignored. If you should have any questions, please come to o ce hours or ask during class as the material is being presented. I will not answer any question on an email in which the answer can be found on the syllabus. I do not repeat in class announcements in emails.

Participation: Participation is highly recommended. No question shall be labeled \stupid" and I will not tolerate disrespect to one's question, answer or observation.

O ce hours: If you wish to use o ce hours you must inform me you intend to do so. I will not give away answers to problem sets during o ce hours. During o ce hours I will answers speci c questions about the material. However, if the question is of the type, \How do I answer this question of the problem set", and you have not yet handed in the problem set, I will not answer it.

Make up work: There is no make up exams.

Late work: Work handed in late will have 30% taken away from it. After that, 10% will be marked o for each day the work have not been handed in.

Let-me-google/D2L-that-for-you questions: I reserve the right to ignore any question that can be answered by careful reading of this syllabus or any distributed material. For example, I reserve the right to not answer questions of the type: \When are your o ce hours?"; \Where is your o ce?"; \Where can I get the software R?"; \Is the nal exam cumulative?"; \When is homework 1 due?" etc.

Enjoy!