Introduction to Mathematical Statistics

Fall 2012
Jin-Lung Lin

Course: 1 credit
Hours: 6:00-9:pm on 9/25, 9/26,9/27,9/28, 10/4, 10/5
Office Hours: Thu. 14:00-17:00, Room A311
Course evaluation: Attendance and home work (30%), Computer assignment (30%), final exam. (40%)

This course aims at refreshing the statistical methods frequently used in management science and developing the skills for quantitative analysis. Mastering one statistical software is another goal.

Textbook and Other References

1. D. D.Wackerly,W. M. Medievally and R. S. Sclaffer (2002), Mathematical Statistics with Applications, 6th ed. Luxury.

2. John Vervain, (2002), simpler-Using R for Introductory Statistics, available at http://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf

One can never really master statistics and econometrics without getting his/her hand dirty. Real data using some statistical package is considered as an essential part of this course. I shall give empirical data analysis during the lectures and assign computer-related home work. For this purpose, I shall teach and ask students to learn and use *R*, a powerful statistical and yet free package. It can be downloaded from

http://www.r-project.org.

Several good free books on R:

1. Grant V. Wordsworth (2008) Econometrics in R. PDF and a browsable HTML version files are available at *www.r-project.org Introduction to Econometrics*, Boston: Addison-Wesley, 2007

2. Christian Kleiber and Achim Zeileis, *Applied Econometrics with R*, Springer, 2008

3. Michael J. Crawley *The R Book*, John Wiley and Sons, 2007

1 Topics

1. Introduction to statistics, probability and R (1 hour)
2. Discrete random variables and their probability distributions (1 hour)
3. Continuous random variables and their probability distributions (1 hour)
4. Multivariate probability distributions (2 lectures)
5. Functions of random variables (2 hours)
6. Central limit theorem (3 hours)
7. Estimation (3 hours)
8. Hypothesis testing (3 hours)
9. Linear regression model (1 hour)