

STAT414, Semester I 2009-2010

Mathematical Statistics

Liang Faming

Bloc 406D, Ext. 58885

fliang@stat.tamu.edu

<http://stat.tamu.edu/~fliang>

The objective of this course is to introduce to students the basic theory of probability and statistics. It provides a necessary basis for students for a further study of advanced statistical courses.

Topics to be covered:

1. Probability: sample space, probability measures, conditional probability, and independence.
2. Random Variables: discrete random variables, continuous random variables, and functions of a random variable.
3. Joint distributions: discrete random variables, continuous random variables, conditional distributions, and functions of jointly distributed random variables.
4. Expected Values: mean, median, variance, covariance, correlation, conditional expectation, and prediction.
5. Limit Theorems: the law of large numbers, convergence in distribution and the central limit theorem.
6. Distributions Derived from the Normal Distribution: χ^2 , t , and F distributions, the sample mean and the sample variance.
- 7*. Estimation of parameters and fitting of probability distributions.

Prerequisites: MATH 221, 251, or 253.

Recommended texts/references:

1. Rice, John A. (2007) *Mathematical Statistics and Data Analysis* (third edition). Duxbury Advanced Series. (textbook, required)
2. DeGroot, Morris H. and Schervish, Mark J. (2002) *Probability and Statistics* (third edition). Boston: Addison Wesley. (reference book, not required)

Grading Rule: Assignments: 10%; First midterm: 30%; Second midterm: 30%; Final examination: 30%.

Lectures: MWF 3:00-3:50 pm classroom: BLOC 150

Tentative Office hours: W 16:00-17:00

Statements on the Course:

- No late assignments will be graded.
- A makeup examination will be only given to the students who could provide satisfactory evidence that the absences are due to some causes beyond their control.
- The student's semester grade will be based solely upon on the above grading rule. No exception will be made at the end of the semester for particular students.
- Incomplete grade: A temporary grade of I (Incomplete) at the end of a semester indicates that the student has completed the course with the exception of a major quiz, final exam, or other work. The instructor shall give this grade only when the deficiency is due to an authorized absence or other cause beyond the control of the student.

ADA, Plagiarism, and Academic Integrity Statement:

- **STATEMENT ON DISABILITIES:** 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 for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Office of Support Services for Students with Disabilities in Room 126 of the Koldus Student Services Building. The phone number is 845-1637.
- **STATEMENT ON PLAGIARISM:** The handouts used in this course are copyrighted. By “handouts”, I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one's own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty”.
- **ACADEMIC INTEGRITY STATEMENT:** “**An Aggie does not lie, cheat, or steal or tolerate those who do.**” All syllabi shall contain the above Aggie Honor Code and refer students to the Honor Council Rules and Procedures at the web site: www.tamu.edu/aggiehonor. If you encounter students cheating or not abiding by university rules then it is mandatory that you report the student to the Aggie Honor System Office: complete information at <http://www.tamu.edu/aggiehonor>.