Syllabus for Math 3770, Prob and Stats

January 2, 2009

Instructor: Ernie Croot

email: ecroot@math.gatech.edu/∼ecroot

Course Webpage: www.math.gatech.edu/∼ecroot Click on the Math 3770 link from the main page.

Office: 103 Skiles

Office Hours: Tuesday 2:00 to 3:00, and Wednesday 3:00 to 4:00.

Class Meeting Times: MWF 2:05 to 2:55 in College of Computing room 17.

Textbook: Devore's *Probability and Statistics for Engineering and the Sciences, Seventh Edition.* Because the text doesn't cover all the topics I would like to discuss in this course, I will probably write some course notes once in a while.

Grade: 20% for each of the first two midterms, 30% for homework, and 30% for the final.

Absentee policy: If you miss an exam or are not able to turn in a homework due to an emergency, you will need to provide documentation attesting to this fact.

Homeworks: Homeworks will be collected about once every two weeks.

Course Material: In this course you will learn the basics of

• Probability theory, which will include a large subset of the topics: probability measures, events, sample spaces, density functions, distributions, conditional probability [Bayes's rule], etc.).

and

• Statistics, which will include a large subset of: statistical sampling, mean, variance, confidence intervals, maximum liklihood estimates, student-t distribution, normal approximations.

MATH 3770E
Instructor: IONEL POPESCU
Office: Skiles 260
email: ipopescu@math.gatech.edu
Office Phone: 404-385-8339
Office Hours: Monday 2-4pm or by appointment.

Lectures: MWF 12:05-12:55 in Skiles 249.

Textbook:
Jay L. Devore, *Probability and Statistics for Engeneering and the Sciences*, eight edition. This has also a student solution manual by Matthew A. Carlton.

There is homework assignment every week, none of which will be graded. Based on the homework there will be quizzes every week on Wednesday for 10 minutes at the end of the class, except the ones with a midterm.

There are two midterm exams on February 8th, and March 5th and one final exam on May 4th from 11:30am-2:20pm.

The final grade will be assigned based on 1/3 quizzes, 1/3 midterms and 1/3 the final. The final will cover all the material from this semester.

There is no makeup exam without a very serious excuse. For a makeup the student must have a medical excuse or for any other exceptions, a serious documentation. No final exams are given earlier than the official date.

All quizzes and exams are closed books and notes, although calculators are allowed for elementary operations.

The final grades will be distributed as $A = 85\% - 100\%$, $B = 75\% - 84\%$, $C = 60\% - 74\%$, $D = 50\% - 59\%$ and F below 50%.

All anouncements and information related to this course will be posted on *t-square* at: https://t-square.gatech.edu/portal

Syllabus/Topics

Probabilities of Events

Random experiments, events, sets, and probabilities; Probabilities for equally likely outcomes, elementary counting; Independent events; Conditional probability, Bayes theorem; Applications: failure identification, series/parallel networks.

Random Variables and Their Distributions

Discrete random variables: Binomial, geometric, Poisson, multinomial; Continuous random variables: Exponential, normal, gamma, Weibull; Poisson process, waiting times; Applications: random partitioning of populations, shapes and volumes, measurement of errors, job completion times.

Expected Values and Functions of Random Variables

Expectations and variances of standard random variables Expectations of functions of random variables; Chi-square as the square of a normal, sums of independent random variables and reproductive properties of standard distributions; Central limit theorem; Applications: sums of costs, traffic flows, system reliability, parallel processing times.

Descriptive Statistics

Random samples: data collection and presentation sample statistics: mean, median, quantiles.

Statistical Estimation

Point estimates and their properties Probability distributions for estimator, the t and F distributions; Confidence intervals; Applications: temperature sensing, computer reaction times.

Hypothesis Testing

Single sample tests, means, variances; Comparison of two populations, means and variances; Applications: radar detection, fluid comparisons.

Simple Linear Regression and Correlation

Fitting a regression line; Inferences on the regression; Predictions for future responses; Correlation; Applications: resource consumption, stress levels.

MATH 3770 – Statistics and Applications
Fall 2011

Class Time and Room
TR 9:35-10:55AM, UA Whitaker 1103.

Textbook
Probability and Statistics for Engineering and the Sciences, 8th Edition, by Jay L. Devore (Brooks/Cole CENGAGE Learning)

Instructor's Information
Name: Xiaojing Ye
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Office Hours: Tuesday 11:05-12:25PM, Wednesday 9:35-10:55AM, or by appointments
Website: http://www.math.gatech.edu/~xye33

Course Contents
Unit 1: Descriptive Statistics and Probability, Chapter 1–2 (2 weeks)
Unit 2: Discrete and Continuous Random Variables, and Their PDFs, Chapter 3-4, (5 weeks)
Unit 3: Joint Distributions, Chapter 5, (1.5 weeks)
Unit 4: Point Estimations, Chapter 6, (1 week)
Unit 5: Confidence Intervals and Tests of Hypotheses Chapter 7-8, (1.5 weeks)
Unit 6: The Analysis of Variance (ANOVA), Chapter 10, (1 week)

Exams
There will be two in-class midterm exams for 50 points each, and a cumulative final for 60 points. Exam dates are 9/29, 11/10 and 12/13 respectively.

Quizzes
There will be five (10pts/each) quizzes. Your lowest quiz score will be dropped.

Homework
Homework will be assigned and checked regularly. Problem list is on the instructor's website.

Grading
A: 200 – 180, B: 179 – 160, C: 159 – 140, D: 139 – 120, F: less than 120 points
NOTE: You must have written medical documentation for makeup tests.

Academic Honesty
The course will be conducted in accord with the University honor code and academic honesty policy which can be found at http://www.honor.gatech.edu.

Students with Disabilities
Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to me, during office hours, when requesting accommodation. This must be done at least ONE WEEK in advance of the date of the requested accommodation.