Mathematics 107 - Introduction to Probability and Statistics
Spring, 2009

Instructor: Fang Chen Office Location: Pierce 121
Phone: 770-784-4639 Email: fchen2@emory.edu
Office Hour: Mondays 4 – 6 pm, Wednesdays 3 – 5 pm and by appointments.

Text and materials:

Elementary Statistics, 6th ed., Allan G. Bluman;
Math 107 Notebook;
Calculator (TI-83, TI-83 PLUS, TI-84 or TI-84 PLUS)

Course Content: Visual displays of data, measures of central tendency and of variability, classification of data, counting, probability, Chebyshev's Theorem, normal distribution, binomial distribution, Central Limit Theorem, hypergeometric distribution, Poisson distribution, confidence intervals, hypothesis testing (means, proportions, variances), simple linear regression and correlation, analysis of variance (one way), Chi-Square Tests (goodness-of-fit, contingency tables), nonparametric methods (Wilcoxon [for independent samples], Kruskal-Wallis). The emphasis is on inference.

Goals: **Cognitive:** At the end of this course students should be able to: categorize a data set; work various simple probability problems; understand the role of functions in statistics; describe major misuses of statistics, recognize several distributions and characterize them; analyze interval data for which statistical tests involving means, proportions, medians, rankings, and variances are the parameters; interpret relationships in bivariate data; know the difference between parametric and nonparametric statistics in relation to inherent assumptions of the general statistical model; recognize the limitations of statistics; understand the role of statistics in analyzing data and in inference; use a computer and/or a calculator; interpret statistical findings in relation to the situation from which the data was drawn, describe the experimental nature of mathematical statistics, draw inferences using the vocabulary of statistics.

Affective: Students may choose to use suggested organizational guidelines, study skills and test-taking approaches. As a service component and to reinforce concepts, students will explain some aspect of counting or probability to elementary school students in Newton County by producing a children's book. Students will perform two experiments, using appropriate statistical techniques.

In summary, the goals are for students: (a) to begin to be good consumers of information through gaining knowledge about statistics, (b) to be more focused on learning processes as they learn and apply study skills, (c) to complete a service project, and (d) to be active in the learning process thus integrating cognitive and affective goals.

Attendance Policy and Expectations:

A student is expected to attend all classes. ***After two absences of any type, five points will be deducted for every unexcused absence.*** There must be documentation for a student to receive an excused absence. Emergencies and verifications are at the discretion of the professor.

Students who are absent for any aspect of the TPSL project will have points (up to 80 points) deducted from this project.

To do well, the average student will need to study about 3 hours outside of class for every class meeting or around 8 to 9 hours per week. Preparing and executing experiments and the TPSL project, studying and reviewing for tests will require more time. A student is expected to come to each class on time and prepared, complete all work in a timely manner and with proper thought, and ask questions. Asking questions is a sign of maturity, not ignorance, as long as the student thinks clearly before asking. A student is expected to treat the instructor and peers with respect.

Documentation from the University Disability Office requesting special accommodations should be presented to your instructor as soon as possible. No special accommodation can be arranged prior to the verification of proper documentation.

Grading:

Grades will be determined by student's performance on four tests, eight assignments, the TPSL (Theory Practice Service Learning) project, two experiments and a comprehensive final exam, as follows:

4 Tests @ 100	400	In general,
TPSL project	220	A, A-: 90% and above
8 Assignments @ 10	80	B+, B, B-: 80 – 89%
2 Experiments @ 50	100	C+, C, C-: 70 – 79%
Final exam	200	D+, D: 60 – 69%
	Total 1000	F: below 60%

Tests, Assignments and Final Exam:

Tests will be given during class time and the dates will be announced. At least 48 hours prior to each scheduled test, a topical outline will be posted on the Math 107 class conference. There are no practice tests or additional problems outside those in the text and Math107 Notebook. Formulas will be provided and your calculator may be used for appropriate portions of tests, assignments, experiments, and the final exam. You are expected to take tests at the scheduled times. Any emergencies will be handled on an individual basis and must be documented.

Eight assignments will be collected and graded.

The final exam will include material selected from the entire course. The final exam will be given at the time designated on the final exam schedule, no exceptions.

Experiments:

There will be two experiments, with students working in groups of two. The dates will be announced depending on the arrangements for the TPSL project. Example experiments are provided in the Math107 Notebook. Each student is expected to participate in a somewhat ***equal*** manner. A signed form of individual contributions must accompany each experiment. No experiment will be accepted after the due date. An individual's grade is based on the individual's contribution, the group's write-up, the statistical analysis used, the experimental procedure outlined and followed, and creativity including originality and neatness.

Homework:

Class time will be used to enrich topics in statistics but will not be used to summarize information from the text. It is each student's responsibility to read the textbook and make appropriate notes. Homework will be assigned every week on the class conference. Homework problems (except those included in the eight assignments) will not be collected but are to benefit the student. Each student should work all of the problems assigned in the text and in the notebook. Example problems will be worked in class. Basic problems and concepts are summarized in the Math107 Notebook.

Components of the TPSL Project:

In groups, students will work with fourth and fifth graders in designated elementary schools. Each group will produce a book that will explain an aspect of probability or counting and will make a presentation of the book to a class of elementary school students. During this process, each student will keep an individual journal of all writing attempts, observations and reflections.

Visits: Prior to making the group book presentations at the elementary schools, TPSL groups will visit their school for two visits of one hour each. Specific dates and times will be announced. These visits will be made on Tuesday and/or Thursday mornings (leaving between 8:00 and 8:30 am). In the initial two visits, students will work with the class in activities designated by the teacher (tutoring, etc). On the third visit TPSL groups will make 10 to 12 minute interactive presentations of their books. Ms. Emily Penprase will arrange your schedule and transportation. She will communicate on the class conference important information. You are required to dress appropriately for the visits.

Book: The book should clearly explain an aspect of probability or counting and should be at least 16 pages long but no longer than 24 pages. Topics must be appropriate for the grade (understandable and G-rated). Some class time and the class conference will provide discussions of possibilities for topics. By a specific date to be announced, each group will provide a draft of the book to your instructor. Groups may choose to make appointments with the instructor prior to this date. Your draft, with comments, will be returned in time to make corrections and adjustments. Each book will be presented in your Math 107 class and to the elementary school students to whom you have been assigned. These books will be the property of the respective class, so make them sturdy!

Presentation: Each group will give a presentation that will be critiqued by the Math 107 class, providing an opportunity to polish each group's presentation. Afterwards, the group presentation will be made to small groups of elementary school students, on a specified day and time (a Tuesday/Thursday morning, arranged by Ms. Penprase). Since these presentations should be focused on elementary school students, groups should show the book while they interact with the audience whether that is the Math 107 class or the elementary school students. Each member of the group should have an integral part of the presentation.

Contributions: Each group must submit a single page sheet itemizing individual contributions to this project and signed by all group members. This will be due after the presentations to the elementary school(s).

Journal: Each student will keep a journal to document progress. Entries should include all work from you, all meetings and notes, all observations and reflections, all false starts; i.e., a complete record of the project from the student's point of view. Each entry must be dated and include what was accomplished or any observations from a visit. These journals are due

approximately one week after completion of the presentations. This should give sufficient time for each student to write his/her individual reflections about the presentation and about this project in general.

Timetable: Dates will be provided for the following as soon as arrangements have been finalized with the elementary schools. Watch the class conference and fill in below when these have been determined.

Determine groups
Visit from Ms. Emily Penprase
Depends on your school, two one-hour visits scheduled
Draft of book due
Draft returned
Group presentation to the class
Depends on your school, presentation to the elementary students
Contribution sheet due
Groups share experiences
Journal due

Grading: Your grade on the TPSL project is based on 220 points as follows:

Book (draft, content, appropriateness, contribution)	100 points
Presentation (Math 107 class, elementary school)	40 points
Journal (visits, observations, reflections, problem-solving, opinions, meetings, group dynamics, etc., be complete!)	80 points

Class Conference/Outside Help:

There is a class conference, **Math107TPSLSpring2009**. Students should have the class conference on their desktops and should *consult this conference every day* for announcements about office hours, SI sessions, tutoring, outlines for tests, updates on TPSL, etc. ***In particular, an outline of the lecture will be posted on the conference after every class, which will include extra handouts, regular homework and special assignments.*** Students may pose individual questions on the class conference.

Students should use **office hours** to ask specific questions related to this course. In addition, students may email, privately or on the Math 107 class conference.

Our **SI (student leaders)** will schedule review sessions each week. Each student is encouraged to pick one of the times per week and attend regularly. Even though these sessions are optional, students who attend SI sessions generally do better in the courses.

Tutors are available in the mathematics center (check the web site for schedule: http://mathcenter.oxford.emory.edu/wiki2/index.php/Main_Page).

Additional Course Notes for Math107 are available on the math center web site (http://mathcenter.oxford.emory.edu/wiki2/index.php/Math_107).

Study groups organized by students are highly recommended. The meetings should be scheduled weekly and should be part of a regular weekly routine.

HONOR CODE: THE HONOR CODE APPLIES TO ALL WORK SUBMITTED FOR CREDIT. YOUR SIGNATURE IS YOUR PLEDGE.