

COURSE SYLLABUS

Statistics – STAT 203

Fall Semester, 2008, Tuesdays and Thursdays, 11:30 – 12:45am in Cudahy Science Building Room 314

Prerequisite: Calculus II (Math 132 or 162 or equivalent)

Text: Tanis & Hogg, *A Brief Course in Mathematical Statistics*, 2008, Pearson/PH, ISBN: 0-13-175139-5

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Office Hours: TU 1:00 – 2:00pm, TH 10:00 – 11:00am and 1:00 – 2:00pm, and by appointment

Course Website: <http://webpages.math.luc.edu/~tobrien/courses/new203/course-homepage.html>

Course Overview

Using tools from Calculus, this introductory course covers the basics of experimental design and sampling theory, introductory probability, point and interval estimation, hypothesis testing, correlation and regression, and statistical modeling. In so doing, science students are given a clear picture of what the field of statistics entails and are exposed to the types of problems and decisions that can be answered using statistical methods.

Although the emphasis in this course is on theoretical justifications in probability and inference, students will occasionally be required to analyze real-life data sets and perform simulation studies using the *Minitab* statistical package, the *R* free-ware language, and the *Maple* program, although no familiarity with these packages will be assumed. Grading will be based on homework assignments, quizzes and exams, and a course paper.

Homework, Quizzes and Exams

Homework assignments will be given approximately weekly, graded and returned to students in a timely manner. The first quiz will be given on 18th September and the Midterm exam will be given on 16th October. If a student performs better on the Midterm than on the first quiz, then the Midterm grade will replace the First Quiz grade for that student. The same rule will apply for the Second Quiz (given on 13th November) and the Final Exam (given on 9th December). The Final Exam will be comprehensive.

Grading Scheme

Homework	22.5 %
First Quiz	10 %
Midterm Exam	22.5 %
Second Quiz	10 %
Final Exam	25 %
Course Paper	10 %

Final course (letter) grades will be awarded according to the following grading scheme:

	[92.5 , 100] = A	[90.0 , 92.5) = A-
[87.5 , 90.0) = B+	[82.5 , 87.5) = B	[80.0 , 82.5) = B-
[77.5 , 80.0) = C+	[72.5 , 77.5) = C	[70.0 , 72.5) = C-
[67.5 , 70.0) = D+	[60.0 , 67.5) = D	[0.0 , 60.0) = F

Participation

Students are expected to attend all classes and to actively participate in classroom discussion. It is expected that students will read the lecture material before class so as to better benefit from the class lecture and discussion.

Computing

Students will optionally develop the ability to analyze data sets using the *Minitab* software package and perform simulations in *R* and *Maple*, although no previous exposure to these packages will be assumed. Students may also use a calculator (such as a TI-84).

Academic Honesty

It is presumed and required that students do their own work on the homework assignments and all exams. Discussing homework problems with others is encouraged; however, submitting work as your own which is copied or paraphrased from someone else is not permitted. This means students may discuss homework problems, but each must write up his/her solutions alone and in one's own words. Neither discussing nor copying related to quiz or exam questions is permitted. Cheating includes, but is not limited to, illegal collaboration, copying, using materials not permitted on tests, and assisting others on tests. Anyone found cheating will not be permitted to withdraw and will receive an "F" grade for the course. Your academic dean will be informed and a statement will be placed in your permanent file.

Tentative Semester Schedule (with Chapters from Text in parentheses) – changes listed on Course Website

Tuesday	Thursday
26 Aug – Intro and Basic Concepts (1.1)	28 Aug – Enumeration; Conditional Prob. (1.2;1.3)
2 Sept – Independence: Bayes Theorem (1.4; 1.5)	4 Sept – Discrete Probability Distributions (2.1)
9 Sept – Expectation (2.2)	11 Sept – Special Distributions (2.3)
16 Sept – Estimation (2.4)	18 Sept – First Quiz
23 Sept – Application; Linear Functions (2.5)	25 Sept – Multivariate Discrete Distributions (2.6)
30 Sept – EDA (3.1) and Application	2 Oct – Continuous Distributions (3.2)
7 Oct – No class – Fall Break	9 Oct – Special Distributions (3.3)
14 Oct – The Normal Distribution (3.4)	16 Oct – Midterm Exam
21 Oct – Estimation; the CLT (3.5; 3.6)	23 Oct – The CLT; Discrete Approximations (3.6; 3.7)
28 Oct – Summary and Confidence Intervals (4.1; 4.2)	30 Oct – CI's and Hypothesis Tests (4.3)
4 Nov – One parameter tests (4.4)	6 Nov – One and Two parameter tests (4.4; 4.5)
11 Nov – Two parameter tests (4.5)	13 Nov – Second Quiz
18 Nov – Simple Linear Regression (4.6)	20 Nov – Goodness of Fit test (4.10)
25 Nov – Contingency Tables (4.11)	27 Nov – No class – Thanksgiving Break
2 Dec – MGF Technique (6.1)	4 Dec – MGF for Linear Functions (6.2; 6.3)
<i>The Final Exam is comprehensive – will take place on Tuesday 9th December 9.00 – 11.00am.</i>	

Note #1: Quizzes will be 60 minutes in length, and the Midterm will be 75 minutes. All quizzes and exams will be closed-book, but students are permitted to use one double-sided 8 ½ x 11" sheet of their own handwritten notes.

Note #2: The last day that a student may withdraw without a penalty grade of "WF" is Friday, October 31st.