

## **MTH 427 Applied Probability & Statistics**

Winter 2006

University of Detroit Mercy

Department of Mathematics and Computer Science

Lecture: Mon, Wed, Fri, 12:00-12:50pm, Room E222

Prerequisite: MTH 241 (Calculus III)

Instructor: Dr. Abhijit Dasgupta

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Blackboard Website: <http://knowledge.udmercy.edu/>

Office Hours: MW 1:00-1:50pm, TR 4:10-5:00pm, and anytime my office door is open. Or, email, call, or talk to me in person to schedule an appointment.

### **Required Textbook**

*Probability and Statistics for Engineering and the Sciences*, by Jay L. Devore, 6th Edition, published by Brooks/Cole (Thomson).

### **Course Objectives**

Develop Probability and Statistics appropriate for engineering. Topics will include Probability Theory, Probability Distributions, Sampling, Point Estimation, Interval Estimation, Hypothesis Testing, Statistical Inference, Correlation and Regression, Design of Experiments, etc. Further topics appropriate for the class may be covered (time permitting).

### **Course Outcomes**

After taking this course, students will be able to:

1. Solve probability and distribution problems.
2. Estimate a population parameter based on sample data.
3. Develop confidence intervals for parameters and functions.
4. Design appropriate hypothesis tests.
5. Perform test of hypotheses on parameters and functions.
6. Fit appropriate linear models.
7. Assess statistical errors in estimation, hypotheses testing, and model building.

### **Important Dates**

Jan 16 Martin Luther King Holiday

Feb 3 Last Day to Drop a Course Without a W

Feb 28 Midterm Grades

Mar 6{11 Mid-Winter/Spring Break

Mar 31 Last Day to Withdraw From Class

Apr 14 Easter Holiday

Apr 27 Final Exam starting at 11:00am

## **Final Exam**

The final exam will be on Thursday, April 27, 11:00am-12:50pm. Note that the exam time is different from that of the lecture. It will be a comprehensive (cumulative) exam, and is mandatory for determining your overall grade. The final exam score cannot be replaced by any of the test scores.

## **Grading Policy**

3 Midterm Tests: 60% (20% each)

Final Exam: 30%

Class Participation, Attendance, Problems: 10%

No make up exams will be given. However, if the final exam score is higher than the lowest test score, then the lowest test score gets replaced by the final score. A missed test counts as the lowest test score.

Grading Scale: A: 90 or above B: 75-89 C: 60-74 D: 50-59

Letter grades may be appended with a '+' or a '-' if the score is close to the boundary of the next (adjacent) higher or lower letter grade score range.

## **Schedule** (very tentative and subject to change)

<i>Week</i>	<i>Date</i>	<i>Material and Activities</i>
1	Jan 9, 11, 13	Discrete Probability and Random Variables (Chs 2-3)
2	Jan 18, 20	Binomial Distribution, Continuous Distributions (Chs 3-4)
3	Jan 23, 25, 27	Continuous Distributions, Normal Distribution (Ch 4)
4	Jan 30, Feb 1, 3	Normal Distribution and Approximations (Ch 4), Review
5	Feb 6, 8, 10	Test 1 on Feb 6, Joint Probability (Ch 5.1)
6	Feb 13, 15, 17	Sampling Distributions, Point Estimation (Chs 5-6)
7	Feb 20, 22, 24	Single Sample Interval Estimation (Ch 7)
8	Feb 27, Mar 1, 3	Single Sample Interval Estimation (Ch 7), Review
9	Mar 6-11	Spring Break
10	Mar 13, 15, 17	Test 2 on Mar 13, Single Sample Hypothesis Testing (Ch 8)
11	Mar 20, 22, 24	Two Samples Inference (Chs 8-9)
12	Mar 27, 29, 31	ANOVA (Ch 10)
13	Apr 3, 5, 7	Regression (Ch 12), Review
14	Apr 10, 12	Test 3 on Apr 10, Selected Topics from Chapters 13, 14, 15, 16
15	Apr 17, 19, 21	Further Topics, Final Review
16	Apr 27	Final Examination (Cumulative) 11:00am-:50pm

## **More Important Information**

1. Working out the homework assignments will be the most important thing for learning this course.

2. Login to <http://knowledge.udmercy.edu/> and frequently check the Course Documents link for homework assignments, solutions to problems and tests, and any other updates and handouts.
3. You are encouraged to ask questions in class, and outside class!
4. Everything in this course description is subject to change.

### **Academic Integrity**

Students are expected to conform to a high standard of honesty and integrity in this course. Any kind of cheating or unfair means to perform in this course (or permitting or helping someone to do so) will result in an automatic zero score for that assignment or test. In addition, the student will be reported to the proper university authority for appropriate action. (See the University Catalog and the Engineering and Science Student Handbook for details.)