MT427 Mathematical Statistics, MWF12 **September 2009**

Professor Jenny Baglivo
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Office: Carney Hall, Room 301A
Office Hours: M-W-F 10:15-11:15AM,
and by appointment

Text: *Mathematical Statistics, and Data Analysis,* 3rd *Edition,* by John A. Rice, Duxbury Press, 2007

Course webpage:
`http://www2.bc.edu/~baglivo/MT427/MT427.html`

Class notes, with room to work out solutions to all class exercises and demonstrations, are located on the course webpage. The class notes are divided into 5 "notebooks" (notebook1, notebook2, ..., notebook5). Please download "notebook1" and bring it to class on Friday.

An introduction to the use of the computer algebra system *Mathematica* (Wolfram Research, Inc.) in probability and statistics is also located at the course webpage. Please download "MMAOverview" and bring it to class on Friday.

MT427 is a calculus-based introduction to the important concepts of mathematical statistics (primarily estimation theory and hypothesis testing theory) and to data analysis. The pre-requisite is a calculus-based introduction to probability theory at the level of MT426.

Note that concepts learned in probability theory (MT426) and mathematical statistics (MT427) are directly applied in followup courses such as MT480 Topics in Modern Statistics, and in courses in applied statistics given in many different departments at Boston College.

Exams, homework and grading: Your final grade will be a weighted average of two in-class exams (45%), written homework, computer assignments and class participation (25%), and a comprehensive final exam (30%).

1. *Examination schedule:*

Date:	**Material from:**
Friday, October 16	Text Chapters 6, 8
Monday, November 16	Text Chapters 9, 3, 10
Friday, December 18, 12:30PM	Text Chapters 3, 6, 8-11 (comprehensive)

   There will be *no makeup examinations.* If you have a serious reason for missing an in-class exam, then you must let me know *prior* to the examination time. If you have a serious reason for missing the final exam, then you must inform the Dean's office *prior* to the final exam time. (The Dean's office will then let me know that you will miss the exam.)

2. *Homework assignments:* There will be about ten problem sets, which will include both by-hand and computer problems. While I expect that students will discuss homework problems with their colleagues, each student must submit his or her own work. You must submit your

homework *on time*, and you must *staple* multiple sheets together; ripped, folded, and torn sheets will not be accepted. "Carbon copy" homeworks will *not* be graded.

3. *Class attendance:* Students are expected to come to class and to be *on time*.

4. *Policy on Cheating:* Incidents of cheating will be reported to the Dean's office.

   In the Dean's words:

   "Academic integrity is central to the mission of higher education. Please observe the highest standards of academic integrity in this course. Please review the standards and procedures that are published in the univeristy catalog and on the web, at:

   http://www.bc.edu/integrity (you may need to click on "Academic Integrity")

   Make sure that the work you submit is in accordance with university policies. If you have any questions, please consult with me. Violations will be reported to the Deans' Office and reviewed by the College's Committee on Academic Integrity. This could result in failure in the course or even more severe sanctions."

Syllabus:

Dates:	**Topics:**	**Text sections:**
Sep: 9, 11, 14, 16, 18	Review and Transition to Statistics **September 11, 14, 16 Classes in Gasson 2**	(Chapters 1-5), 6.1-6.4
Sep: 21, 23, 25, 28, 30, **Oct:** 2, 5, 7, 9	Estimation Theory	Edition 3: 8.1-8.5, 8.7 (Edition 2: 8.1-8.6)
Oct: 14	Additional problems	
Oct: 16	**Class exam 1**	
Oct: 19, 21, 23, 26, 28, 30	Hypothesis Testing Theory	Edition 3: 9.1-9.6 (Edition 2: 9.1-9.7)
Nov: 2, 4, 6, 9, 11	Order Statistics and Quantiles	3.7, parts of Chapter 10
Nov: 13	Additional problems	
Nov: 16	**Class exam 2**	
Nov: 18, 20, 23, 30, **Dec:** 2, 4, 7, 9, 11	Analysis of Two Samples **December 7, 9, 11 Classes in Gasson 2**	11.1-11.5
December 18, 12:30PM	**Comprehensive final**	