MATH442601|2 Probability Theory   Fall 2018/2019

Professor Jenny Baglivo
Voicemail: 2-3772
Email: baglivo@bc.edu

Office: Maloney Hall 574
Office Hours: M-W-F 10-10:40AM, 12-12:40PM,
                and by appointment

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

Course webpage:
`http://www2.bc.edu/jenny-baglivo/MT426/MT426.html`

MATH4426 is a calculus-based introduction to probability generally taken by mathematics and science students. You are expected to have a working knowledge of the techniques of both single variable calculus and multivariable calculus, and good algebra skills.

Probability theory can be studied on many levels. In this course, I hope to strike a good balance between theory and practice. The textbook for the course supports this approach.

Probability theory is directly applied in advanced courses in mathematical statistics, including MATH4427 Mathematical Statistics and MATH4480 Topics in Modern Statistics, and in courses in applied statistics given in many different departments at Boston College.

Let me emphasize that

> MATH2202 (multivariable calculus), or its equivalent, is a strict prerequisite for this course.

Course notes, with room to work out solutions to all class examples and exercises, are located on the course webpage. I have divided the course notes into 5 notebooks, which correspond to material in chapters 1 through 5 of the Rice textbook.

> Please print the first set of course notes (*notebook1*) and bring it to the next class.

Exams, homework assignments and grading: Your final grade will be a weighted average of three in-class exams (48%), written homework and class participation (24%), and a comprehensive final exam (28%).

1. *Examination schedule:*

Date:	Material from:
Friday, September 28	Chapters 1, 2
Friday, November 2	Chapters 2, 3
Monday, December 3	Chapter 4
Friday, December 14 (MWF9) Monday, December 17 (MWF11)	Chapters 1 through 5 (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 final exam.)

2. *Homework assignments:* There will be about ten written problem sets. You are allowed to discuss general problem strategies with your classmates, but you must write up and submit your own work. Homework is due at the beginning of the class period of the day it is due.

   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:* 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 university catalog and on the web, at:

   http://www.bc.edu/offices/stserv/academic/integrity.html

   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 University's Committee on Academic Integrity. This could result in failure in the course or even more severe sanctions.

Syllabus:

Dates:	Topics:	Textbook sections:
8: 27, 29, 31; **9:** 5, 7, 10, 12, 14	Introductory topics	1.1–1.6
9: 17, 19, 21, 24	Random variables	2.1–2.3 (first part)
9: 26	Additional problems	
9: 28	**Class exam 1**	
10: 1, 3, 5, 10	Random variables, continued	2.1–2.3 (second part)
10: 12, 15, 17, 19, 22, 24, 26	Joint distributions	3.1-3.6
10: 29	Mathematical expectation	4.1–4.5 (first part)
10: 31	Additional problems	
11: 2	**Class exam 2**	
11: 5, 7, 9, 12, 14	Mathematical expectation, continued	4.1–4.5 (second part)
11: 16, 19, 26	Moment-generating functions	4.6
11: 28	Limit Theorems	5.1–5.3 (first part)
11: 30	Additional problems	
12: 3	**Class exam 3**	
12: 5, 7	Limit theorems, continued	5.1–5.3 (second part)
12: 10	Additional problems	
Friday, 12/14, 9AM (MWF9) Monday, 12/17, 9AM (MWF11)	**Comprehensive final**	