Math 53 | Brooklyn College
Department of Mathematics
Course Information | Spring 2009

Room and Schedule: 330 NE, Monday, Wednesday, 12:25 p.m. - 2:05 p.m.

Text: Introduction to Time Series and Forecasting, Second Edition, by Peter J. Brockwell and Richard A. Davis. You will **absolutely** need the "ITSM 2000" CD-ROM which is packaged with this book. If your copy of the book comes without the software, talk to me about it as soon as possible.

Instructor: Christian Beneš; Office: 1119a N; E-mail: `CBenes@brooklyn.cuny.edu`.

Office Hours: Monday, Wednesday, 4 - 5 p.m. You should feel free to attend as often as you would like. In fact, this course lends itself particularly well to discussions, so you are strongly encouraged to visit my office hours regularly so we can talk about any questions, thoughts, or ideas you may have about the material.

Class Attendance: It is strongly recommended that you come to every single lecture. I will sometimes be giving essential information in class that you may not become aware of otherwise. The syllabus is only a rough guideline and you will need to come to class to know what is actually being covered. If you have to miss a class, make sure you get lecture notes from someone else taking the course.

Work Outside of Class: While coming to class will help you grasp the material, it will probably not be sufficient to pass the course. You should expect to spend on average 10 hours per week working on the course outside of class. (This number can of course vary quite a bit depending on how comfortable you feel with the class material.) In particular, I will be assuming that you are reading the sections of the book corresponding to a lecture before the following class.

E-mail: I will regularly share information with you by e-mail. I will do this under the assumption that **you check your e-mail at least once a day**, so please make sure you do so. You should also feel free to e-mail me with questions you might have but make sure to sign your e-mails and not to leave the subject line blank. If you fail to follow these rules, I will most likely not reply to you.

Homeworks: 6 assignments will be collected during the semester. They will be a mix of theoretical and applied problems. You are encouraged to work on them in groups but must turn in your own copy with your own words and writing. Homework sets turned in with identical wording will receive a grade of 0. In order to get credit, you will need to give a clear and rigorous explanation **in your own words** of how you arrive to a result. I will be very demanding with your mathematical syntax and will take off points for logical imprecisions, missing "=" signs, lack of clarity, etc. 3 problems will be selected on each homework assignment and you will be graded only on these.

Exams: There will be a mid-term exam and a final exam, which will probably be a take-home exam involving some modeling. **I will not give make-up midterms or exams.** If you are forced to miss an exam due to illness, I need to be notified within 72 hours. When you are healthy again we can discuss reweighting your grades. I will need to see original written documentation in the form of a letter from your doctor.

Mid-term: Wednesday, April 1

Final Exam: This will be either a take-home exam or an in-class exam on Wednesday, May 18, 1-3 p.m.

Grades: Your homework grades will be worth a total of 40% of your final grade. The mid-terms and the final will be worth 25% and 35% of your final grade, respectively. Your letter grade will be determined by the following table:

93+	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

To obtain an A+ for the course, you need a numerical average of 98.0 **before rounding**.

Dropping, Adding, and Withdrawing:

Monday, February 2: Last day to add classes.
Monday, February 9: Last day to file pass/fail applications
Tuesday, February 17: Last day to drop a course without a grade and to late-add a course.
Tuesday, April 7: Last day to apply for withdrawal from a course.

Website: Homework assignments, handouts, and practice exams, as well as links to useful websites and Java Applets will be posted on the blackboard website, which can be reached through the CUNY Portal.

University's policy on Academic Integrity: The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for implementing that policy can be found at this site: http://www.brooklyn.cuny.edu/bc/policies. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member MUST report the violation.

Center for Student Disability Services: In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at 718-951-5538. If you have already registered with the Center for Student Disability Services please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

Math 53 Lecture and Exam Schedule

This syllabus is intended only as a rough guideline. All topics are subject to changes without notice.

Class#	Date	Chapters	Homework Due	Topics
1	01/26 (M)			Introduction and overview
2	01/28 (W)	Appendix A		Probability review
3	02/02 (M)	1.1-1.3		Some simple time series (t.s.) models
4	02/04 (W)	1.4		Stationary models; the ACF
5	02/09 (M)	Appendix B		Statistics review
6	02/11 (W)	1.5	HW 1	Estimation of trend
7	02/18 (W)	1.5		Estimation of trend and seasonality
8	02/23 (M)	1.6		Testing the estimated noise sequence
9	02/25 (W)	2.1, 2.2	HW 2	Stationary processes; linear processes
10	03/02 (M)	2.2, 2.3		Linear processes; ARMA processes
11	03/04 (W)	2.4		Sample Mean and ACF
12	03/09 (M)	2.5		Forecasting stationary time series
13	03/11 (W)	2.6	HW 3	Wold decomposition
14	03/16 (M)	3.1		ARMA(p, q) process
15	03/18 (W)	3.2		ACF and PACF of ARMA process
16	03/23 (M)	3.3		Forecasting ARMA processes
17	03/25 (W)	5.1	HW 4	Yule-Walker estimation; Burg's algorithm
18	03/30 (M)	5.1		Innovations and Hannan-Rissanen algorithms
19	04/01 (W)			**MIDTERM EXAM**
20	04/06 (M)	5.2		Maximum likelihood estimation
			SPRING BREAK	
21	04/20 (M)	5.3		Diagnostic checking
22	04/22 (W)	5.4, 5.5	HW 5	Forecasting; order selection
23	04/27 (M)	6.1		ARIMA models for nonstationary t.s.
24	04/29 (W)	6.2, 6.3		Identification; unit roots in t.s. models
25	05/04 (M)	6.4, 6.5		Forecasting ARIMA model; seasonal ARIMA
26	05/06 (W)	6.6	HW 6	Regression with ARMA errors
27	05/11 (M)	4		Spectral Analysis
28	05/13 (W)	4		Spectral Analysis

FINAL EXAM: Wednesday, May 20, 3:30 - 5:30 p.m.
(or due by Wednesday, May 20, 5:30 p.m.)