

## Math 8444 – Time Series Methods – Spring 2016

**Instructor:** Jesse Frey

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**Office Hours:** 5-6 PM Wednesday and by appointment

**Textbook:** *Time Series Analysis and Its Applications: With R Examples*, by Shumway and Stoffer. This book is available through the Falvey Library as an e-book so that you can read online or print out chapters as needed.

**Course topics:** Stationary processes, Moving averages, Autoregressive processes, ARMA processes, Forecasting, Diagnostic techniques, Seasonal time series models, Classical decomposition, and other topics.

**Course prerequisites:** Statistical Methods (Math 7404) or equivalent.

**Course webpage:** Start at [www.homepage.villanova.edu/jesse.frey/](http://www.homepage.villanova.edu/jesse.frey/) and follow the link for Math 8444. Assignments and homework solutions will be posted on this page.

**Grading:** Your grade will be determined by your homework average (30%), your score on the midterm (25%), your score on the final (25%), and your grade on the course project (20%). Grades will be assigned either according to the following scale or according to one more favorable to you:

A	92-100	B+	86-88	C+	76-78	F	< 70
A-	89-91	B	82-85	C	70-75		
		B-	79-81				

**Computing:** We will use Minitab and R for our computing needs. Minitab is available through the university, and R can be downloaded at [www.r-project.org](http://www.r-project.org).

**Homework:** Homework will be assigned and collected on a weekly basis. You are encouraged to consult with others in the class, but you must submit your own solutions. Assignments should be written up neatly, and multiple-page submissions should be stapled. Typically, you must show your work to receive full credit. Homework assignments will be due at an announced class time, and late assignments will not be accepted without prior arrangements. If you know you will be absent on a day when an assignment is due, please talk with me to arrange an alternate submission plan.

**Tentative Date for Midterm:** March 9. You will be allowed to bring a specified number of formula sheets to the midterm and to the final.

**Course Project:** Part of your grade in the course will be based on a data analysis project that you complete during the semester and present to the class in a short talk near the end of the semester. The project must be your own work, and it must include a full time series analysis using the methods from the course. Your data set should consist of one or more related time series, and your analysis should include model fitting, model checking, and forecasting. More details on the project will be given soon.

**Other Important Dates:**

March 2 – No class due to spring break.

April 20 and 27 – Course project presentations.

May 4 – Final exam.

**Academic Integrity:** All work that you submit must be your own. Violations of the university code of academic integrity will be addressed in accordance with the university-wide procedure.

**Students with disabilities:** Appropriate accommodations will be made for individuals with disabilities. Before I can make accommodations, however, you must contact the Office of Learning Support Services and have them notify me that accommodations are needed. It is a good idea to do this early in the semester.

**Make-up Tests:** Make-up tests will be given only in the case of an excused absence. If you have an excused absence, you should contact me as soon as you are able.

**Attendance:** Attendance is essential if you wish to do well in this course, and you are expected to attend each class meeting. If you do miss a class, it is your responsibility to find out what was covered and what was assigned. The course webpage can help.