

## IE409: Time Series Analysis

**Instructor:** Professor Frank E. Curtis

**Office:** Mohler 325

**Phone:** 610.758.4879

**E-mail:** frank.e.curtis@lehigh.edu (NetID fec309)

**Textbook:** Peter J. Brockwell and Richard A. Davis, *Introduction to Time Series and Forecasting*, Springer Texts in Statistics, 2nd ed., 2002.

**Lecture:** Tuesdays and Thursdays, 9:20-10:35am, Iacocca Hall E301

**Office Hours:** Tuesdays, 1:30-3:30pm, Mohler 325

**Prerequisites:** IE121 (Applied Engineering Statistics) or equivalent

**Course Description:** This course covers the analysis and prediction of random processes that are measured over time, i.e., time series. The majority of the course will be devoted to modeling, fitting, and forecasting univariate time series, and if time allows then we will extend our techniques to multivariate time series and nonlinear models. The methodology we will use is reasonably sophisticated from a mathematical and statistical point of view, and thus the material will be quite challenging. However, there will also be a strong emphasis on understanding the practical study of time series, for which we will use computer packages, including the one accompanying the textbook.

**Grading:** Your grade will be calculated as the average of five components: Homeworks, Midterm Exam, Final Project, Final Exam, and Participation.

**Homeworks:** There will be regular homework assignments throughout the semester, generally assigned and due every other week. Each homework must be submitted electronically before 5pm on the day that it is due. No credit will be given for any late assignment. You are free to consult with other students when working on homework, but the work you turn in must be your own. Please cite any references you use, including fellow students.

**Exams:** There will be a midterm exam and final exam. Both will be cumulative, and most likely they will be take-home exams that include some computational component.

**Project:** A project will be assigned in the second half of the semester. The project will include writing a report and making a presentation to the class. We will determine later on in the semester whether the project will be assigned to everyone individually or to groups, but every individual will be required to write a report.

**Participation:** Attendance will not be taken in class. However, participation in the course will factor into your grade. If you are not able to attend or participate in lecture, then participation entails being a presence online, through e-mail or activities on CourseSite, or in office hours. You will also be considered to have good participation if you simply e-mail me to ask questions or make comments about lecture, whether you were there in person or viewed the video online. Of course, the lecture will suffer if attendance is poor, but for that it is up to you and your fellow class members to be there to ask questions and keep the

discussion lively. In short, if by the end of the semester I don't know who you are, then your Participation grade will suffer.

**Regrade Requests:** If you disagree with a grade you receive on a homework or exam, then you may submit a regrade request. This request must be in writing and submitted no more than 48 hours after you receive the graded assignment.

**Emergencies:** Everyone is responsible for all material covered and announcements made in lecture. If you believe you will miss a long period of time in the course due to illness, family emergencies, etc., then please contact me as early as possible. Under no circumstances will I give credit for a missed homework or exam unless you have discussed your absence with me in advance.

**Communication:** The slides for each lecture will be posted on CourseSite before class. Homework assignments, solutions, announcements, and other important material will also be posted on CourseSite. Important information, comments, corrections, and updates about the course may also be sent via e-mail. If you have a question/concern, please feel free to send me e-mail. However, if your e-mail requires a time-dependent response, then it is important that you assume that I have not received any e-mail to which I do not respond within a day.

**Software:** In this class we will make use of the ITSM software that accompanies the textbook. It is everyone's responsibility to have access to this software.

**Students with Disabilities:** If you have a disability for which you are or may be requesting accommodations, please contact me and the Office of Academic Support Services, University Center C212 (610.758.4152) as early as possible in the semester. You must have documentation from Academic Support Services before accommodations can be granted.