BANA7050
Forecasting and Time Series Methods
MW 10:10AM - 12:00PM, Lindner 221
Spring 2017

Instructor: Yichen Qin
Office: 529 Lindner Hall
Office Hours: Before and after regular class time
Email: qinyin@ucmail.uc.edu
Web Page: http://canopy.uc.edu
Course materials will be posted on the course web in Canopy.

Prerequisites:
* You must have completed the following course(s) with the minimum grade indicated of C: BANA7041
* You must have an academic program in 22 Carl H. Lindner College of Business
* You must have an academic program with the following credit level: G
* Basic knowledge of SAS and R.

Textbooks:

Computing Resources:
We will use SAS or R analyzing time series data. You can access SAS in the second floor computer lab (215 and 202). Computer labs all around campus in, e.g., Engineering, Education, etc. also have SAS installed. R is free online.

Grading:
Homework 15%
Computer Homework/Cases 15%
Exams (exam 1 in the 5 or 6th week/exam 2 in the 7th week) 65%
Participation and attendance 5%

Individual Homework, Computer Homework/Cases:
Three homework and three case assignments will be given, and they are due at the beginning of class. Late homework is not permitted. Homework assignments can be found on the course home page.

Withdrawal Policy:
You may withdraw from the class until the official deadline.
Honor Policy:
Exam and homework are to be the sole work of each student. Anyone cheating or assisting another during an exam or finishing homework will be given a 0 for that part and possibly a grade of F for the class. College procedures will be followed and the graduate dean will be notified. If warranted, additional action will be taken.

For most detailed information on Academic Misconduct or related university policies and procedures, please see the UC Code of Conduct.  
http://www.uc.edu/conduct/Code_of_Conduct.html

Important: The course will cover the theoretical part of times series models in the first half of the semester, and cover the application, SAS programming and real data analysis in the second half of the semester.

Tentative Schedule:
List of Topics:
Introduction to time series
Stationarity, strictly stationary, weakly stationary, backshift operator, white noise
ACF, PACF
AR model
MA model
ARMA model
ARIMA model basics
ARIMA transformation, log transformation, square root transformation
Model identification using ACF and PACF
Model selection
Information criterion, AIC, BIC
ESACF, SCAN, MINIC
Model diagnosis, residual check
Portmonteau Q test, Ljung–Box test for lack of fit
Dickey Fuller test for nonstationarity
Forecast, point and interval forecast
Forecast for log transformed data
Seasonal ARIMA
SAS ARIMA cases
ARCH, GARCH
SAS GARCH cases
Recent advances in time series

Syllabus Revision Policy:
The instructor reserves the right to revise the syllabus.