

STAT 8123, Fall 2023
Time Series Analysis and Forecasting (CRN:53465)
(2:00pm-4:30pm, Wednesday, Liacouras Walk: LW420)
August 28, 2023-December 15, 2023

Professor Wei:

Office: Room 384, Liacouras Walk 1810
Office Hour: 1:00pm-2:00pm, Wednesday
Email: wwei@temple.edu
Website: <https://sites.temple.edu/wwei/>

Course Description:

A time series analysis and forecasting course. It covers important univariate and multivariate time series methods including ARIMA models, intervention analysis and outlier detection, time series regression, volatility and GARCH models, vector time series models, and cointegration.

Course Prerequisites:

Any one of the following:

1. Stat 8002
2. Stat 8101 and Econ 8009
3. Advanced undergraduate statistics and probability equivalent to Math 3031-3032

Topics:

1. Fundamental concepts
2. Stationary time series models
3. Nonstationary time series models
4. Time series modeling and forecasting
5. Seasonal time series models
6. Testing the random walk and unit roots
7. Intervention analysis and outlier detection
8. Time series regression
9. Volatility and GARCH models
10. Vector time series models and cointegration

Grading:

Course grades are based on the weighted average of projects and a term paper or the weighted average of projects and a final.

Text :

Wei, William W.S.
Time Series Analysis, Univariate and Multivariate Methods, 1st edition, 1990; 2nd edition, 2006; classic version, 2019, Pearson Addison-Wesley, Reading, Massachusetts.

References:

Box, G.E.P., Jenkins, G.M., Reinsel, G.C., and Ljung, G.M. (2015)
Time Series Analysis, Forecasting and Control, 5th ed., Wiley

Chatfield, C. (2004)
The Analysis of Time Series, 6th ed., Chapman & Hall/CRC

Hamilton, J. D. (1994)
Time Series Analysis, Princeton University Press

Lutkepohl, H. (2007)
New Introduction to Multiple time Series Analysis, Springer.

Selected journal articles

Important Dates:

Classes Begin: Monday, August 28

Last day to add or drop a course: Monday, September 11

Fall break and Thanksgiving Holiday: Monday, Nov. 20 to Sunday, Nov. 26

Last day of classes and last day to withdraw: Monday, December 11

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