

STAT 443 Time Series and Forecasting ; Winter 2019 (January to April)

Lecture times: Tue Thu: 12:30-13:50

Room: MacMillan 166

Instructor: Dr. H. Joe

Office: ESB 3138

Office hours: To be announced

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Lab times: L2A Mon 15:00, L2B Tue 16:00, L2C Fri 12:00, L2D Fri 10:00

Web site: <http://ugrad.stat.ubc.ca/~stat443> (password protected)

UBC On-line calendar description: Trend and seasonality, autocorrelation, stationarity, stochastic models, exponential smoothing, Holt-Winters methods, Box-Jenkins approach, frequency domain analysis.

Prerequisites: Introductory probability, introductory statistics; Corequisite: Stat 305 (Introduction to Statistical Inference); Recommended: Stat 306 or Econ 326 (Multiple Regression).

References.

1. Time series analysis and forecasting by example, by Bisgaard and Kulahci, Wiley, 2011 (available electronically at UBC).
2. The analysis of time series: an introduction, sixth edition, by C Chatfield, Chapman & Hall.

Main topics:

Visualization, trends, exploratory techniques, autocorrelation

Forecasting and prediction, assessment of prediction accuracy

Exponential smoothing and Holt-Winters methods

Autoregressive, moving average, ARIMA

Other topics if time permits

Statistical software:

R : www.r-project.org or cran.stat.sfu.ca

SAS : https://www.sas.com/en_us/learn/academic-programs/software.html (SAS OnDemand for Academics or University edition)

It is your choice to use one of these software or both for doing homework. Knowledge of SAS programming is sometimes listed as a qualification for jobs in statistics.

Homework: Regular WebWork homework, and WebWork from labs.

Team project: Submission of project proposal in early February, and written project report due near end of term. Team size should be about 4.

Exams: One midterm and a final exam. The date for the midterm is Thu. Feb. 28. If the midterm exam is missed, its weight is transferred to the final exam.

Course Evaluation: Tentatively, the weighting scheme is

Midterm 25%, Final 55%, Homework+Labs 13%, Project 7% .

All components of the course must be satisfactory to pass this course.

Use of Canvas: (a) For Webwork in canvas.ubc.ca, click on the WebWorK link for Stat443; (b) same for piazza.