Data Analytics and Machine Learning in Finance and Business Economics

The goal for this class is to learn new technical data analytics and machine learning skills in three areas of business: finance, microeconomics, and macroeconomics. The focus will be on time-series models, causal experiments, and textual analysis. Time permitting, we will also touch on other topics such as clustering, principal component analysis, classification, and nonparametrics.

Optional textbook: "Business Data Science" by Matt Taddy, available for free online through the UW library https://alliance-primo.hosted.exlibrisgroup.com/permalink/f/kjtuig/CP71310712980001451Links to an external site.
Required software: We will be using R in this class and I will be coding in R via R Studio. Both are free and must be downloaded in installed prior to the first class. https://www.r-project.org/ Links to an external site.and https://rstudio.com/products/rstudio/download/ Links to an external site.(desktop version).

Individual homework: There will be seven weekly homework assignments, to be completed on your own. You must hand in your write-up and code electronically via Canvas on the due date. Your lowest score will be dropped. Grades will be assigned as 0 (missing), 1 (ouch), 2 (poor), 3 (good), 4 (great), 5 (amazing).

Group project: The final assignment of this course will consist of a group project (self-selected teams of 5-6 students). Your goal is to apply the techniques learned in class to an interesting **business economics** question with an appropriate dataset (replicating/improving existing academic research is fine too). There are multiple deliverables for this project:
1) Three progress reports: the first is an initial exploration of many ideas given available data; the second is a deeper dive into one chosen idea including a careful wording of the question and initial descriptive analysis of the data; and the third builds on the second by showing the simplest model possible and some preliminary results
2) A 10-minute recorded video presentation
3) A 5-10 page report due the day before the last class, with code and dataset
4) A peer evaluation of your fellow teams' projects.

Grading: 45% on individual homework (equally weighted, lowest one dropped), 45% on the group project, 10% on class participation.

Foster code of conduct: By being a student in this course, you acknowledge that you are a part of a learning community at the Foster School of Business that is committed to the highest academic standards. As a part of this community, you pledge to uphold the fundamental standards of honesty, respect, and integrity, and accept the responsibility to encourage others to adhere to these standards.

Religious accommodations: Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy Links to an external site.. Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form Links to an external site..