DSC5121 HANDS ON WITH BUSINESS ANALYTICS: FINANCE AND ECONOMICS

AY2015-2016 Semester 2

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Course Description

The goal of this course is to expose students to the art of data analytics with emphasis in finance and economics through practical hands on applications. We will explore various topics aiming at understanding finance and economics phenomena as well as gaining insights for decision-making through data analytics.

Learning Outcomes

The course will explore various topics aiming at understanding finance and economics phenomena as well as gaining insights for decision-making through data analytics. At the end of the course students should be competent at sourcing finance and economics datasets, applying data analytics techniques to those datasets and extract insights to assist capital allocation and business decisions both in professional and personal settings. Below is a non-exhaustive list of topics to be covered in the course, in no particular order.

- Leading economic indicators and how to use them to foresee swings in the economic environment.
- The big and small pictures of secular economic cycles and how business decision-making is affected.
- The perspective of investment strategies and capital allocation decisions in economic cycles.
- Monetary policy and its impact in financial markets and the broader economy.
- Selection of asset portfolios though fundamental and market indicators.

Readings

There is no specific reference book or readings recommended for the course. References and materials will be disclosed (and where possible provided) during the course in line with the topics of each class. Students are encouraged to explore data analytics courses in Coursera and edX before the start of the course, more details below.

Prerequisites

In order to be successful and make the most out of this course, students are expected to come with knowledge of data science (descriptive analytics, predictive analytics, visualization techniques, etc). This is a hands-on course and covering the theoretical background of data analytics tools and techniques is out of scope.

In addition, it is crucial that students have knowledge and experience with R, or at the very least other analytics platforms (Matlab, SAS, etc). Please note that Excel is not an appropriate platform to develop and follow on the material covered on this course.

Students must have these two requirements in mind before enrolling, and therefore either already fulfill them or seek ways to gain the required knowledge and experience beforehand. In this time and age there is a torrent of resources to help students gaining the required background. Thus, effort and commitment must be made ahead of time in order to catch up if one intends to take advantage and be successful in the course. The resources below are particularly recommend, although students may choose any other resources that are of his or her preference.

- R Programming (Johns Hopkins University) – Coursera
https://www.coursera.org/course/rprog

- Practical Machine Learning (Johns Hopkins University) – Coursera
https://www.coursera.org/course/predmachlearn

- The Analytics Edge (MITx: 15.071x) – edX
https://courses.edx.org/courses/MITx/15.071x/1T2014/4264e68418f34d839cf0b33a5da644b2/

Finally, keen students may wish to explore the following dataset resources ahead of starting the course. We will use them extensively.

- Federal Reserve Economic Data - FRED - St. Louis Fed
https://research.stlouisfed.org/fred2/

- Bureau of Economic Analysis (BEA)
http://www.bea.gov/

- Quandl
https://www.quandl.com/

- Yahoo! Finance
http://finance.yahoo.com/

Assessment

There will be a number of group assignments, always following the week of a class presentation and discussion by the instructor. Students are expected to be organized in groups of 4-5 and present their respective group's assignment in classroom. In addition, there will be one individual assignment for the course. The final grade will distributed as follows:

Component	Weight
Group assignments	50%
In-class presentations of group assignments	10%
Individual assignment	40%
Total	**100%**

Given the diverse backgrounds and past experiences students come from, it is appropriate that the topic of their respective individual assignments should be of their own choice. The instructor also believes that this creates a stronger sense of ownership for the exercise, which should be engaging and stimulating. Basic rules and expectations for group and individual assignments will be disclosed during the course. Students are encouraged to consult the instructor for guidance on his or her assignments choices.