Course Calendar:

Date Topic

8/30/2017 Overview of machine learning and the tools used by data scientists; introduction to Python and R programming languages and Jupyter notebooks; Introduction to Artificial Intelligence (AI) and Machine Learning (ML). Also, topic pruning/supplementation based on interest and proficiency of class. Assignment: Read Heaton textbook chapter 1

9/6/2017 Normalization, distance metrics, and k-means clustering. Introduction to Excel and VBA. Introduction to GitHub. Assignment: Read chapters 2, 3, and 5 of Heaton textbook

9/13/2017 Test 1; Instructor will be coordinating Society of Actuaries Predictive Analytics Symposium in Chicago so substitute will be available. Small-group reviews of Chapters 1-3, 5. Assignment: Form questions for instructor and send via email. Establish GitHub repository (repo) and (for students wishing to have software on their own laptops, install Anaconda, R, and Jupyter notebooks), add a simple Jupyter notebook to your repo.

9/20/2017 Review of material for Test 1, followed by Genetic Algorithms. Assignment: Read supplied articles and apply provided workbook to self-chosen application. Also, discussion of Actuarial Exam Tactics book by Roy Ju.

9/27/2017 Assignment to read chapters 6-8: Error calculations, Introduction to training, optimization training. Special Guest Speaker: Olga Jacobs, FSA, CERA, MAAA on how to get a job and what employers are seeking. Assignment: Review for Test 2. Assignment: Chapters 9 and 10

10/4/2017 Form project teams; Guest lecturer: Rosmery Cruz, Data Scientist, Global Research and Data Analytics, RGA - Overfitting – how it occurs and ways to minimize it. Test 2;

10/11/2017 Discrete Optimization Gradient Boosting and Linear Regression; Trees and Random Forests. Assignment: Pair up in small groups and solve assigned problem.

10/18/2017 First look at neural networks; brief discussion of Deep Learning.

Assignment: Read supplied articles and code solution to assigned neural network problem

10/25/2017 Frequent itemsets, recommender systems, sentiment analysis; Introduce Project ideas and expectations. Assignment Read supplied articles.

11/1/2017 Recap of ML techniques; Groups begin deciding Project topic

11/8/2017 Data visualizations; how to create effective presentations; review of material to date. Read supplied articles.

11/15/2017 Test 3; Discuss project plan with groups. Behavioral Economics – why your projects must consider more than just data and analytics. Assignment: Read supplied articles.

11/22/2017 Thanksgiving

11/29/2017 Guest speaker (Jeff Heaton) on Deep Learning; summary of power and responsibilities of predictive analytics and ML. (Bring textbook for autographs)

12/6/2017 Project presentations and feedback on projects and course

Grading Policy:

Attendance and Participation: 150 Points (10 per class)

Homework: 90 Points (10 per assignment)

Tests: 240 Points (80 per test)

Project: 120 Points\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total: 600 Points

The course grade will be based on your total score, as follows:

A 560+, A- 540+, B+ 520+, B 500+, C+ 460+, C 440+, C- 420+, D 360+, F <360