Tentative Syllabus and Course Description for
CIS 217: Introduction to Business Analytics

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1. Course Description and Learning Objectives

This course covers the emerging field of business analytics (BA) or 'data mining' and expands and develops the students' analytical tool kit in analyzing massive data sets. Using cases studies and hands-on data sets, students will learn data extraction and manipulation techniques, data cleaning and integration; descriptive analytics including cross tabulation, pivot tables, data visualization, and dashboarding; predictive analytics using a variety of machine learning techniques including supervised and unsupervised classification schemes, text classification, clustering techniques. Students will gain hands-on experience with R, and Tableau.

The students will know how to:
i. Get business data using a variety of interfaces including SQL.
ii. Get the data ready for analytics by integrating, re-coding, and cleaning the data.
iii. Use descriptive analytics for exploring the data using Tableau and R
iv. Use predictive analytics in R for making business decisions
v. Evaluate business decisions made using machine learning techniques
vi. Communicate business decisions using advanced techniques such as Tableau Stories

2. Relation with other Courses

This course covers complements basic statistics and business modeling skills coved the required courses as a part of this concentration. It should be taken after these courses.

3. Communication, Blackboard, and Office Hours

Course material and announcements will be posted to the course blackboard and announcements will also communicated to students via email.

4. Textbooks and Required Material

The text for the course is:

Foster Provost and Tom Fawcett (2013) *Data Science for Business*, O'Reilly.

Additionally the following book is recommended:

Dona Wong, (2013), *The Wall Street Journal Guide to Information Graphics: The Dos and Don'ts of Presenting Data, Facts, and Figures*, W.W. Norton & Co.

Additional readings will include survey and research papers in the field.

5.   Assignments, Case Studies, or Projects

Assignments include individual and team work.

6.   Evaluation and Grading

The course grade is based on the following:

Assignments	25%
Professionalism and Class Participation	10%
Midterm	30%
Final Exam	35%
Total	100%

7.   Class Specifics

The class approach will combine traditional lectures, hands-on demonstrations, real-world case studies, a guest speaker, and team presentation and lively class discussions.

8.   Roadmap

Week by week details will be available on the class site on Blackboard. The main topics are listed here.

i)   Introduction of business analytics
ii)   Data Visualization: Utilizing the visual cortex for data perception, best practices in visualization.
iii)   Data visualization using Tableau
iv)   Building dashboards in Tableau
v)   Building story boards in Tableau
vi)   Introduction to R
vii)   Data Visualization using R
viii)   Managing data in R
ix)   Data cleaning in R
x)   Descriptive analytics using R
xi)   Introduction to Classification – using linear and logistic regression for classification
xii)   Rule based and Decision tree classifiers
xiii)   Estimating errors
xiv)   Avoiding overfitting
xv)   Evaluation of decisions made using machine learning techniques