Fisher College of Business
The Ohio State University

Syllabus

Business Adm 3630.05 - Introduction to Business Analytics
(2 Credit Hours)
Autumn Semester 2015

Instructor: Ralph Greco, BS. MS. Industrial Engineering
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(Cell) 614-286-3350

Class Schedule
Wednesday Section #1 5:30 - 7:30, Schoenbaum 215
Thursday Section #2 5:30 - 7:30, Mason 405

This course is the first in a two-course sequence that comprises the course requirement for students enrolled in the Fisher Business Analytics Cluster and which, when combined with other requirements, provides students with in-depth competence in Business Analytics business practices. This first course is a pre-requisite for enrollment in the second course in this sequence which will be offered during the Spring Semester. Instructional staff for this first course in the two-course sequence includes Faculty from the Fisher College as well as representatives from the sponsoring companies -- Scotts, JPMC, Cardinal Health, Lane Bryan, and Saama Technologies.
Learning Objectives

1. To gain a basic understanding of Business Analytics and its applicability to various Industries
   a. Understand the fact from fiction in the current environment.
   b. What is Big Data and other terminology that is used in the marketplace today?
   c. Who are the current key players in Business Analytics?

2. Analytics within the Organization
   a. How do today’s organizations work with/utilize/take advantage of Analytics?
   b. What organizational change must take place for analytics to have an impact?

3. Critical Thinking and its place in Business Analytics
   a. Inductive vs Deductive Reasoning.
   b. Framing the question(s) needed by the business, that will then drive the data requirements

4. Working with the data
   a. Types and varieties of data
   b. Organization of data

5. Descriptive Analytics
   a. Understanding what the data are, and what it might be telling you
   b. Basic Tools for Descriptive Analytics
   c. Advanced Tools for Descriptive Analytics

6. Predictive Analytics
   a. Can the data provide us with insights as to future events, potential results?
   b. Basic Tools for Predictive Analytics
   c. Advanced Tools for Predictive Analytics

7. Prescriptive Analytics
   a. Next best action
**Course Overview**

The overall objective of the first course in the Business Analytics industry sequence is to familiarize the students with the concept of Data Analytics (Big Data) and its applicability in a business environment. This course will utilize both faculty from Fisher College as well as Corporate Executives from sponsoring companies and Analytics vendors. These individuals will lead discussions on various topics central to Analytics.

At the end of the Fall semester, students should have acquired an understanding of Analytics - the terminology, concepts and familiarity of potential tools and solutions that exist today. This will not be an in-depth study of modeling or optimization techniques, but when the two course sequence is completed, student should be better familiar with overall analytics tools/techniques and their use in corporate environments.

The course is a combination of lectures, case studies, individual and group exercises (teams of 3-4). Class interaction will be a key component of the overall grade, and students are expected to be prepared each week when they attend. It is assumed that each student will be familiar with basic technology (web search, etc.), have access to a computer (not an iPad), and have basic knowledge of statistics, and math. We will not be finding a solution for a quartic equation, but we will be discussing regression methods (linear, non linear, Bayesian). Be prepared accordingly.

All students are expected to maintain professionalism in their interactions with the external speakers. This includes interactions during their presentations, and in any outside classroom events (social or otherwise).

Students need to be ready to go each week in class. Discussions in class can only be fueled by those individuals that are ready to ask questions, provide feedback (non emotional) and defend their positions with logic and facts - just as you will have to do in a corporate environment.

There will be multiple opportunities/requirements for the student to present in class. This includes presenting to their peers, OSU Faculty and external speakers.


Optional Text


Course Mechanics

Grading

Class Participation  40%
Individual Presentations/Homework  60%

Attendance Policy

Students are expected to attend all cluster activities and classes. Absences will be excused only in the case of health problems (doctor’s note required) or death in the family. Unexcused absence may result in reduction of points from the final course grade.

Cell Phone Use

Absolutely no cell phone use in class whatsoever! During breaks or outside of classroom, no problem.

Computer or Tablet Use

Only allowed in the classroom for class related activities (taking notes or presentations).
Projects, Case Studies

The class will be divided into project teams at various points in the semester. Team Lead will be assigned by Instructor or Guest Lecturer.

Class Participation

Obviously, given that class participation is 40% of the overall grade, each student should be “ready to go” each week. Guest lecturers will leave plenty of time at the end of their lecture/discussion for questions and as a result the students need to be actively listening and engaged during the presentation. Attendance will be taken.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct. [http://student.ife.osu.edu/csc/](http://student.ife.osu.edu/csc/).

Disability Services

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone number is 292-3307, TDD is 292-0901; [http://www.ods.ohio-state.edu/](http://www.ods.ohio-state.edu/)
## Tentative Schedule for Fall Semester

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecturer</th>
<th>Topic</th>
<th>Learning Objective</th>
<th>Reading and Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/26 or 8/27</td>
<td>Greco</td>
<td>Class Introduction and expectations.</td>
<td>Review of course topics, objectives, and expectations of instructor. General definition of Analytics and Big Data.</td>
<td>Read – Chapter #1 Assignment - Data Work Warmup</td>
</tr>
<tr>
<td>9/2 or 9/3</td>
<td>Greco</td>
<td>Big Data and Analytics</td>
<td>Continued discussion around Big Data and Analytics, with examples from industry and the text discussed.</td>
<td>Read - Chapter #2 Projects to be Assigned in Class</td>
</tr>
<tr>
<td>9/09 or 9/10</td>
<td>Greco</td>
<td>Framing the Problem</td>
<td>Analytics starts (not always) with recognizing a problem or decision that needs to be made and begin the work to solve it. First exposure to tools used in class (SPSS, R, Tableau).</td>
<td>Read - Chapter #3 Data Work Warmup (due in class)</td>
</tr>
<tr>
<td>9/16 or 9/17</td>
<td>Greco, Dan Magestro (Cardinal)</td>
<td>Organizational Change Associated with Analytics</td>
<td>Great. You want to do Analytics, and you know you have a problem that could be solved with the proper approach. How do you get the company to take advantage of Analytics? Should you build a COE?</td>
<td>Read -- Handouts Assignment - Problem Description</td>
</tr>
<tr>
<td>9/23 or 9/24</td>
<td>Greco, Stan Lucas (Lane Bryant)</td>
<td>Data Modeling</td>
<td>Understanding the problem or decision is one piece. Recognizing what data are required where that data reside (if at all) is another component. What will the data look like? How can it be collected? How is it managed?</td>
<td>Read - Handouts Problem Description (Due in Class)</td>
</tr>
<tr>
<td>09/30 or 10/01</td>
<td>Greco</td>
<td>Review of Descriptive Statistics</td>
<td>Lets remind ourselves of all that we learned in previous classes!</td>
<td>Assignment - Descriptive Stats for Project</td>
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<tr>
<td>Date</td>
<td>Instructor</td>
<td>Topic</td>
<td>Details</td>
<td>Resources/Assignments</td>
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<tr>
<td>10/7 or 10/8</td>
<td>Greco</td>
<td>Descriptive Analytics</td>
<td>AdHoc Reporting, Dashboards are great examples of Descriptive Analytics. When are these appropriate, and when are they too simple?</td>
<td>Descriptive Stats for Project (due in dropbox) Assignment - Visualization for Project Data</td>
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<tr>
<td>10/14 or 10/15</td>
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<td>Mid Term Break/Exams</td>
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<tr>
<td>10/21 or 10/22</td>
<td>Greco</td>
<td>Descriptive Analytics</td>
<td>Discussion focused on Tableau and its use in Descriptive Analytics.</td>
<td>Read -- Handouts</td>
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<tr>
<td>10/28 or 10/29</td>
<td>Greco</td>
<td>Predictive Analytics</td>
<td>Can we construct models that will allow us to predict outcomes? Strength and weakness of a predictive model. Use of SPSS and/or R for a model build example and assignment.</td>
<td>Assignment - Bike Rental Data Set for Regression Visualization for Project Data (due in class)</td>
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<tr>
<td>11/4 or 11/5</td>
<td>Greco</td>
<td>Predictive Analytics</td>
<td>Continued discussion around predictive models.</td>
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<tr>
<td>11/11 or 11/12</td>
<td>Joe Proudfoot (JPMC)</td>
<td>Predictive Analytics</td>
<td>Introduction to high end models. Exposure to tools like iThink, Stella and other linear programming modeling tools for optimization.</td>
<td>Bike Rental Regression (due in Drop Box)</td>
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<td>11/18 or 11/19</td>
<td>Greco</td>
<td>Communicating and Acting on Results</td>
<td>You had a question, built a model, and collected data. Great. Now what? How do you describe the results and convince others.</td>
<td>Read -- Handouts</td>
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<td>11/25 or 11/26</td>
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<td>Thanksgiving Week</td>
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<tr>
<td>12/2 or 12/3</td>
<td>Greco</td>
<td>Class Re-Cap</td>
<td></td>
<td>Over flow</td>
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Attachment #1

Analytics Companies That You Should Know!

Aerospike
Alteryx
Clearstory Data
Cloudera
Concurrent
Datameer
Datastax
EBay
ESRI
Guavus
GreenPlum
Hadapt
HortonWorks
IBM
Kaggle
Kapow Software
KarmaSphere
Oracle
PayPal
Pentaho
Platfora
Precog
Predictive Technologies
Quid
Revolution Analytics
SAS
Sisense
Space-Time Insight
Splunk
Tableau
Talend
Teradata
Think Big Analytics
Attachment #2

Books that you should read at some point!


The Shallows. Nicholas Carr (2009)


The Optimization Edge. Steve Sashihara. (2011)

The Signal and The Noise. Nate Silver. (2012)

The Big Switch. Nicholas Carr. (2013)


To Save Everything, Click Here. Evgeny Morozov. (2013)


What to Expect When No Ones Expecting. Jon Last (2013)

The Information: A History, A Theory, A Flood. James Gleick. (XXXX)

Chaos: Making a New Science. James Gleick (XXXX)

Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie or Die. Eric Siegel. (2013)

Moneyball. Michael Lewis. (2011)


Freakanomics. Steven Levitt. (2009)


Thinking, Fast and Slow. Daniel Kahneman. (2011)


The Information. James Gleick. (2011)

Smart Cities. Anthony Townsend (2013)

Every Shot Counts. Mark Broadie (2014)


Attachment #3

Glossary of Terms (ones to know!)

A/B Testing
Classification
Cloud Computing
Cluster Analysis
Crowdsourcing
Data fusion
Data Mining
Data Warehouse
Ensemble Learning
ETL (extract transform load)
Genetic Algorithms
Hadoop
Machine Learning
Mashup
Metadata
Network Analysis
NoSQL
Optimization
Pattern Recognition
Predictive Models
R
Regression
Sentiment Analysis
Signal Processing
Spatial Analysis
Spatial-Temporal Analysis
SQL
Statistics
Stream Processing
Structured Data
Unstructured Data
Visualization