



## BUS 394 10 Special Topic: Business Analytics

### Course Syllabus – Spring 2014

Instructor: Susan A. Vowels, MBA, CSCP  
Office: Daly 102  
Office Hours: Sunday 4:00 – 7:00 p.m. (lab), Wednesday 4:00 to 6:00 p.m. (lab), by appointment, and drop in  
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#### Required Texts

Davenport, Thomas H. (2013) *Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data*.

Franks, Bill (2012) *Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics*

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

Other readings to be provided in class or through Canvas

#### Optional Texts

*Big Data, Analytics, and the Future of Marketing and Sales*, McKinsey Chief Marketing & Sales Officer Forum (*Free as Kindle download*)

Aiden, E. and Michel, J-B. (2013) *Uncharted: Big data as a lens on human culture*. Riverhead. ISBN-13: 978-1594487453

#### Course Description

Analytics has been with us since the dawn of arithmetic. With the advent of computer technology, the tools for conducting analytics have become more sophisticated but many of the basic questions are the same. How can we use mathematical analysis to understand events that have happened and how can we use data from the past to help predict the future? In this course, our eye will be focused on business analytics, the use of information technology to support the collection and analysis of data, turning it into actionable knowledge.



Thomas Davenport, a long-time expert in the field, defines business analytics as “using analytics in business to improve business performance and better satisfy customers.” He identifies three types of analytics: Descriptive Analytics, Predictive Analytics, and Prescriptive Analytics. First, how do we describe what has happened; second, how can we use the past to predict the future; and third, how can we identify the best action to take based on our analysis. In this class, we will consider all three types of analytics, both conceptually and experientially.

We’ll also look at the evolution of the use of computer technology for analytics, moving from decision support to business intelligence to business analytics. We’ll look at the corresponding foundations of information organization from online transactional processing (OLTP) which is based on relational databases to online analytical processing (OLAP) which uses data warehouses to in-memory analytics which uses column-centric databases. The evolution of various forms of data organization has been driven by the increasing sizes of the databases to be analyzed. “Big data”, a term that has recently entered our vocabulary, refers to the gigantic masses of data made possible by increased granularity in data collection (such as by RFID) and by the staggering number of transactions enabled by the Internet (such as online purchases). Besides this structured data, big data is increasingly augmented by unstructured data consisting of emails, text messages, social network feedback, and other amorphous forms of information that can be mined to discover trends in consumer behavior, many times before that behavior is manifested in hard sales data.

The texts we’ll read provide conceptual and empirical knowledge about these technologies. For the experiential component of this class, we will use products developed by SAP to populate a data warehouse cube, create queries, and create interactive dashboards. These exercises are based on case scenarios so we’ll augment them by looking at actual data collected by Sam’s Club and other large retailers that are made available by the University of Arkansas partnership with the Teradata University Network. We’ll also use visual analytics software from SAS, also made available from the Teradata University Network. Each week will consist of both lectures/class discussions revolving around the texts and hands-on use of software.

### Grading Components

Hands-on exercises	30%
Response papers	10%
Case study presentation	10%
Exam One	15%
Exam Two	15%
Group project	20%

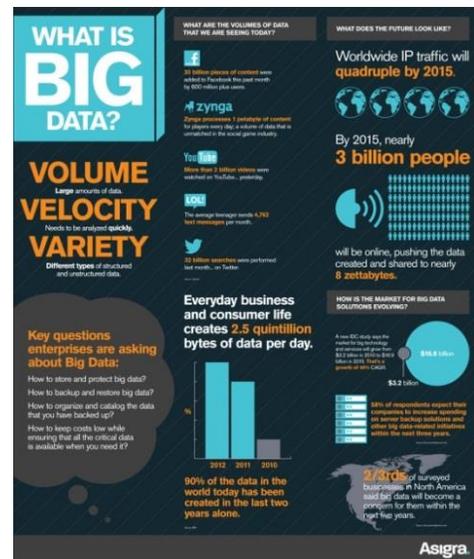
### Honor Code

All work submitted, including homework, is required to have the following pledge attached to it, with your signature:

*“I(we) pledge (my) our word of honor that I(we) have abided by the Washington College Honor Code while completing this assignment.”*

### Hands-on Exercises

Most homework assignments will consist of tutorial exercises that will give you hands-on experience using the various types of software we’ll be examining. While some of the software can be downloaded to your own Windows-capable computer and is also accessible from library computers, some software is only installed on the computers in Daly 108. In order to give you access to this software outside of class, I’ve set up optional lab hours on Sunday and Wednesday evenings during which Daly 108 is reserved for



this class as well as BUS 304. These hours are outside normal class hours and coincide with my office hours (see above).

It is your responsibility to find the time to complete the tutorial exercises using the lab hours and time allotted in class. If you have a conflict that prevents you from making use of the lab hours, please see me well in advance and I will try to accommodate your schedule as long as the conflict is academically related (ex. required attendance at a lecture for another class), work that cannot be rescheduled, athletic game or a one-time event that cannot be rescheduled (ex. honor society induction). Please plan ahead; Daly 108 is heavily used so available alternative times are few.

### **Response Papers**

After the completion of each major topic, you are asked to write a two or three page response paper critiquing the technique used, and identifying both strengths and weaknesses of the technique. I'm not looking for a description of the technique; I'm looking for your insights into the benefits and/or drawbacks of the use of this technique by a firm. What should managers look out for if deciding to deploy this technique? What kinds of environments are ideal for this technique; what kinds of environments are not ideal? What ethical dangers exist in the approach to information by this technique? Some of the ideas you will develop in response papers may have their beginnings in discussions with your peers, but the actual writing is expected to be a solo effort.

### **Case Study Presentation**

You will present an example of contemporary business analytics use by an organization. You may use general audience outlets such as the Washington Post or the Wall Street Journal or specialized outlets such as Computerworld or Infosystems to find an article on which to base your presentation. Your presentation should contain the following elements:

- Description of the application of business analytics including software used, data sources, use of data warehouse/data mart, etc.
- The organization's objective; advantages gained by the organization
- Challenges to the effective use of analytics
- Ethical considerations

### **Exams**

Two exams will be given on material presented in class as well as selections from the required texts. One exam will be given before Spring Break; the other will be given at the end of the semester. Exams will be paper exams and cover definitions, models, and application of concepts. One week before each exam I'll provide a written guide listing the topics that will be covered.

### **Group Presentation**

Working in groups of two, you will demonstrate and describe one of the analytics approaches learned over the course of the semester. A detailed description will be provided separately; basically, the group presentation is an opportunity for you to synthesize the theoretical and conceptual content studied with the "real world" application of these concepts.

### **Attendance Policy**

You need to come to class. The material in each class builds a foundation for subsequent material; therefore, missing a class means that you will not only miss material for that day, but you will also jeopardize later assignments that incorporate learning from the day you missed. As important, this class depends heavily on your active participation and interaction with your fellow students.

You are allowed to miss class twice over the course of the semester for any reason; if you miss class more than two times, you will lose one percentage point of your final grade for each class missed, regardless of the reason for the absence. If you miss class, it is your responsibility to complete assignments (remember – you can always turn assignments in early!) and get notes from other students. Students on academic probation must attend all classes without exception.

## **Learning Differences**

Students who are in need of special accommodations because of a documented learning disability or physical disability should see Ms Andrea Vassar, Director of Academic Skills (2nd Floor, Miller Library), [avassar2@washcoll.edu](mailto:avassar2@washcoll.edu). Once approved, the accommodation plan will be developed. It is your responsibility to share the accommodation plan with me prior to due dates for assignments.

## **Alignment with Business Management Department Learning Outcomes Assessment Goals**

The following describes the alignment of this class with the learning outcomes targeted by the Business Management Department.

- *Managerial knowledge:* You will learn about information systems-assisted decision-making and knowledge acquisition tools and how these tools benefit organizational competitiveness, efficiency and effectiveness.
- *Critical thinking:* You will learn to ask important questions about the analytics tools available to managers and to reconcile theoretical and conceptual descriptions of these tools with the actual use of these tools.
- *Quantitative analysis:* You will learn effective and clear methods of visual representation of data and you will learn the appropriate application and interpretation of selected statistical R algorithms used for predictive analytics.
- *Communication skills:* You will practice skills acquired in earlier courses by presenting effective arguments and employing listening skills in class discussions and making individual and group presentations on a variety of topics.
- *Global perspective:* You will learn to determine how the location source of the data may impact analysis and conclusions.
- *Collaboration skills:* You will learn to work as individuals within a team oriented, collaborative environment as you complete challenging hands-on assignments. You will also collaborate in creating an effective group presentation.
- *Ethical awareness:* You will build on concepts learned in BUS 304 Management Information Systems regarding ethical approaches to the design and use of information systems. You will delve further into the areas of privacy and the appropriate collection and use of data.

## SCHEDULE – Dates Subject to Change

<b>Week of</b>	<b>Class discussion/lecture topics</b>	<b>Hands-on – Subject to Change</b>
January 20	Course Overview and Introduction to Business Analytics <i>Enterprise Analytics: Part I – Overview of Analytics and Their Value</i>	Google n-gram analysis SAP Crystal Reports – using Access database as a source
January 27	<i>Enterprise Analytics: Part II – Application of Analytics</i>	SAP BusinessObjects Explorer – using Excel spreadsheet as a source
February 3	<i>Taming Big Data: Part One – The Rise of Big Data</i>	SAP HANA
February 10	<i>Taming Big Data: Part Two – The Technologies, Processes, and Methods</i>	Sam’s Club Store Customer ABC Analysis using University of Arkansas big data files
February 17	<i>Enterprise Analytics: Part III – The Human Side of Analytics</i> <i>Taming Big Data: The People and Approaches</i>	SAP BusinessObjects Dashboard design – using Excel spreadsheet as a source
February 24	<i>Taming Big Data: The Analytics Culture</i>	SAP BusinessAnalysis – using SAP InfoCube as a source for Business Explorer Query Designer and BusinessObjects Analysis
March 3	<b>Exam One</b>	Creating a data warehouse InfoCube
March 9	SPRING BREAK	
March 17	Relational database review; introduction to data warehouses; revisiting the star schema model	<continued>
March 24	In-class conversion of a relational database model to a star schema data warehouse model	<continued>
March 31	SAP’s Business Warehouse structure – the extended star schema	SAS Visual Analytics
April 7	<i>Predictive Analysis: The Power to Predict Who Will Click, Buy, Lie, or Die</i>	<continued>
April 14	Introduction to R algorithms	SAP Predictive Analytics
April 21	Group work	
April 28	<b>Group Presentations</b>	
Finals Week	<b>Final Exam</b>	