

Business Analytics for Managers			Summer 2015
M/W, 5:30-8:10 pm, N132			Last Revision
			6/29/2015
class		topic	due date
1 M	18-May	Course Overview What Is Analytics?	
Prepare for Class			
Read*	HBR**	Competing on Analytics (Jan 2006)	
Read	DSB (optional)	Chapter 1 > Introduction: Data Analytic Thinking	
<i>*Note: Article readings can be found in the Readings folder in D2L</i>			
<i>**Note: Legends for abbreviations can be found on the last page of this document</i>			
Dig Deeper			
Skim	BAH	The Field Guide to Data Science	
		http://www.boozallen.com/insights/insight-detail/data-science-field-guide	
Read	Occam's	Avinash Kaushik at Occams' Razor: The Lean Analytics Cycle	
		http://www.kaushik.net/avinash/lean-analytics-cycle-metrics-hypothesis-experiment-act/	
2 W	20-May	Data Exploration Be able to analyze data for insights and summarize data characteristics of qualitative and quantitative variables using numerical, graphical and statistical measures. One-way, two-way and multiple comparisons.	
Prepare for Class			
Read	BusStat	Chapters 2, 3 and 4	
Install	JMP	Install JMP software on your home or laptop computer	
		http://mis.aug.edu/msdnaa	
Dig Deeper			
Read	DSB (optional)	Chapter 2 > Business Problems and Data Science Solutions	
Read	ISL	Chapter 2 > Statistical Learning	
Read	Fortune	Can Big Data Cure Cancer? Miguel Helft August 11, 2014	
		www.fortune.com/2014/07/24/can-big-data-cure-cancer/	
Watch	BBC	Hans Rosling's 200 Countries, 200 Years, 4 Minutes BBC Joy of Stats	
		http://youtu.be/jbkSRLYSojo	
	IBM	Four Ways to Innovate Using Big Data and Analytics December 2014	
		http://www.forbes.com/sites/ibm/2014/12/08/four-ways-to-innovate-using-big-data-and-analytics/	
Before Class Deliverable			
Quiz	D2L	BusStat 3e Chapter Quiz: Displaying and Describing Quantitative Data	5pm 5-20
After Class Deliverable			
Lab	DE	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 5-27
Memorial Day Holiday			

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3 W	27-May	Exploring Differences	
Be able to construct and interpret comparison tests including: Confidence Intervals for Mean, Hypothesis Tests for Mean, Two-Sampe t-tests for Means, Confidence Interval for differences between Two Means, a Chi-Square Test of Independence and an ANOVA test for differences in more than two Means.			
Prepare for Class			
Review	BusStat3e	Chapters 11, 12, 13, 14	
Read	Fortune	The Algorithmic CEO	
		http://fortune.com/2015/01/22/the-algorithmic-ceo/	
Dig Deeper			
Read	Wired	This Guy's Quest to Track Every Shot in the NBA Changed Basketball Forever	
		http://www.wired.com/2014/10/faster-higher-stronger/	
Read	AAAI	From Data Mining to Knowledge Discovery in Databases (Fall 1996)	
		http://www.aaai.org/ojs/index.php/aimagazine/article/view/1230/1131	
Before Class Deliverable			
Summary	BEGD	Chapters 1 (Analytics or Die) & 2 (What is Analytics) , Behind Every Good Decision	5pm 5-27
Quiz	D2L	BusStat 3e Chapter Quiz: Confidence Intervals and Hypothesis Tests for Means	5pm 5-27
After Class Deliverable			
Lab	ED	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-1
4 M	1-Jun	Exploratory Analysis	
Cluster; Principal Components Analysis			
Dig Deeper			
Read	HBR	Don't Trust Your Gut (May 2003)	
Read	Analytics Mag	Internet of Things (March-April 2015)	
		http://www.analytics-magazine.org/march-april-2015/1239-transformational-analytics-internet-of-things-analytics	
Read	McK	Big data: The next frontier for innovation, competition, and productivity (May 2011)	
		http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation	
Before Class Deliverable			
Summary	McKinsey	Views from the front lines of the data-analytics revolution (March 2014)	5pm 6-1
		http://www.mckinsey.com/insights/business_technology/views_from_the_front_lines_of_the_data_analytics_revolution	
Summary	BEGD	Chapters 3 (Top Seven Analytics Methodologies), Behind Every Good Decision	5pm 6-1
After Class Deliverable			
Lab	EA	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-3

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5 W	3-Jun	Simple Linear Regression Review	
		Construct and interpret a linear regression model including diagnostics for model assumptions	
Prepare for Class			
Study	BusStat3e	Chapters 4, 15, 16	
Dig Deeper			
Read	ISL	Chapter 3 > Linear Regression Section 3.1 Simple Linear Regression	
Read	S+B	Who Should Own Big Data? August 2013	
		http://www.strategy-business.com/article/00211?gko=44b8e	
Before Class Deliverable			
Summary	MITSloan	Raising the Bar with Analytics (Winter 2014) [dropbox - individual]	5pm 6-3
Quiz	D2L	BusStat 3e Chapter Quiz: Correlation and Linear Regression	5pm 6-3
After Class Deliverable			
Lab	SLR	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-8
6 M	8-Jun	Multiple Regression & Buidling Multiple Regression Models	
		Construct and interpret multiple regression models	
Prepare for Class			
Study	BusStat3e	Chapters 17, 18	
Dig Deeper			
Read	ISL	Chapter 3 > Linear Regression Section 3.2 Multiple Linear Regression	
		& 3.3 Other Considerations in the Regression Model	
Watch	TED	The beauty of data visualization - David McCandless	
		http://youtu.be/5Zg-C8AAIGg	
Before Class Deliverable			
Summary	MITSloan	Sustaining an Analytics Advantage (Spring 2015) [dropbox - individual]	5pm 6-8
Quiz	D2L	BusStat 3e Chapter Quiz: Inference for Regression	5pm 6-8
In Class Deliverable			
Peer Eval	SSG	Student Study Group Peer Evaluation #1 Due In Class	5:30 PM
After Class Deliverable			
Lab	MR	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-10

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7 W	10-Jun	Multiple Regression & Buidling Multiple Regression Models Construct and interpret multiple regression models	
Prepare for Class			
Study	BusStat3e	Chapters 17, 18	
Dig Deeper			
Read	ISL	Chapter 3 > Linear Regression Section 3.2 Multiple Linear Regression & 3.3 Other Considerations in the Regression Model	
Before Class Deliverable			
Summary	S+B	The Quantified Self Goes Corporate (Spring 2015) http://www.strategy-business.com/article/00305	5pm 6-10
Summary	McK	Making data analytics work: Three key challenges (March 2013) http://www.mckinsey.com/insights/business_technology/making_data_analytics_work	5pm 6-10
After Class Deliverable			
Lab	MR	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-15
8 M	15-Jun	Predictive Modeling Concepts & Predictive Modeling: Multiple Regression Construct and interpret multiple regression models for prediction	
Prepare for Class			
Study	BusStat3e	Chapter 24 > Introduction to Data Mining	
Read	DSB (optional)	Chapter 5 > Overfitting and Its Avoidance	
Study	BusStat3e	Chapter 18 Section 18.4 Buiding Regression Models	
Dig Deeper			
Read	ISL	Chapter 2 > Statistical Learning Section 2.2 Assessing Model Accuracy	
Read	ISL	Chapter 5 > Resampling Methods Section 5.1 Cross-Validation	
Read	ISL	Chapter 6 > Linear Model Selection and Regularization Section 6.1 Subset Selection	
Read	WSJ	Amazon Wants to Ship Your Package Before You Buy It http://blogs.wsj.com/digits/2014/01/17/amazon-wants-to-ship-your-package-before-you-buy-it/	
Read	MCK	Mobilizing your C-Suite for big-data analytics November 2013 http://www.mckinsey.com/insights/business_technology/mobilizing_your_c_suite_for_big_data_analytics	
Before Class Deliverable			
Summary	BEGD	Chapter 4 (B.A.D.I.R.: Business Analytics in Five Simple Steps), Behind Every Good Decision	5pm 6-15
After Class Deliverable			
Lab	PMR	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-17

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9 W	17-Jun	Predictive Modeling: Logistic Regression	
Construct and interpret logistic regression models for predictive classification			
Prepare for Class			
Study	BusStat3e	Chapter 17 17.6 The Logistic Regression Model	
Dig Deeper			
Read	DSB (optional)	Chapter 4 > Fitting a Model to Data (pp 97-103)	
Read	ISL	Chapter 4 > Classification Sections 4.1 - 4.3	
Read	LinkedIn	Analytics Engagement Framework	
		https://www.linkedin.com/pulse/article/20140827233730-63117151-analytics-engagement-framework	
Read	Fortune	Ford's \$100M Data Machine Fortune 500 Big-Data Special June 2014	
		http://fortune.com/2014/06/02/fortune-500-ford-big-data/	
Read	JMP	Predictive Analytics Webcast and White Paper by Stephen Few of Perceptual Edge	
		http://www.jmp.com/landing/few_predictive_archive.shtml	
Before Class Deliverable			
Summary	Stat Sci	To Explain or to Predict? (2010) [dropbox - individual]	5pm 6-17
After Class Deliverable			
Lab	PLG	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-22
10 M	22-Jun	Predictive Modeling: Decision Trees	
Construct and interpret decision tree classification models and use model comparison procedures to choose between alternative models			
Prepare for Class			
Read	BusStat3e	Chapter 24 > Introduction to Data Mining	
Dig Deeper			
Read	DSB (optional)	Chapter 3 > Introduction to Predictive Modeling	
Read	ISL	Chapter 8 > Tree-Based Methods Section 8.1 The Basics of Decision Trees	
Read	Salford	The Ultimate How-To Guide For Planning A Predictive Analytics Project	
		http://info.salford-systems.com/blog/bid/295210/The-Ultimate-How-To-Guide-For-Planning-A-Predictive-Analytics-Project	
After Class Deliverable			
Lab	PDT	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-24

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11 W	24-Jun	Predictive Modeling: Advanced Trees & Reporting Results Understand and apply advanced tree based models	
Discuss Semester Project			
Prepare for Class			
Read	JMP Book	Help>Books>Specialized Models > Chapter 3>Partition Models	
Dig Deeper			
Read	ISL	Chapter 8 > Tree-Based Methods Section 8.2 Bagging, Random Forests, Boosting	
Read	ISL	Chapter 6 > Linear Model Selection and Regularization Section 6.3 Dimension Reduction Methods	
Read	ISL	Chapter 10 > Unsupervised Learning Section 10.2 and 10.3	
Before Class Deliverable			
Summary	BEGD	Chapter 5 (Predictive Analytics, aka Rocket Science), Behind Every Good Decision	5pm 6-24
In Class Deliverable			
Peer Eval	SSG	Student Study Group Peer Evaluation #2 Due In Class	5:30 PM
After Class Deliverable			
Lab	PAT	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 6-29
12 M	29-Jun	Other Predictive Modeling Considerations Severe class imbalance; cut-off values; lift curves; dimension reduction	
Prepare for Class			
Watch	JMP	Explore Data with JMP (3:18) https://www.youtube.com/watch?feature=player_embedded&v=0pmcWj7DyKI	
Watch	JMP	Analytically Speaking featuring Kaiser Fung On-Demand Webcast (44:05) http://www.sas.com/apps/webnet/webcast_viewer.htm?index=wc_jmp10sep12bc	
Dig Deeper			
Read	HBR	HBR Blog Network: How P&G Presents Data to Decision-Makers (Davenport) http://blogs.hbr.org/2013/04/how-p-and-g-presents-data/	
Watch	BBC	Hans Rosling's 200 Countries, 200 Years, 4 Minutes BBC Joy of Stats http://youtu.be/jbkSRLYSojo	
Read	HBR	Diamonds in the Data Mine (May 2003)	
Before Class Deliverable			
Summary	Economist	The Virtuous Circle of Data 2014 http://live.wavecast.co/virtuouscircleofdata/	5pm 6-29
After Class Deliverable			

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13 W	1-Jul	Business Experimentation Factorial Experiments Analyze multifactor experiments (2k factorial)	
Prepare for Class			
Study	BusStat3e	Chapter 20 > Design and Analysis of Experiments and Observational Studies	
Dig Deeper			
Read	StatEase	That Voodoo We Do - Marketers Are Embracing Statistical Design of Experiments by Richard Burnham	
Read	HBR	Boost Your Marketing with Experimental Design (Oct 2001)	
	IJRIM	Experimental design on the front lines of marketing: Testing new ideas to increase direct mail sales	
		Bell, Ledolter and Swersey International Journal of Research in Marketing 23 (2006): 309-319	
Read	BEGD	Chapter 6 (Data and Analytics Tools), Behind Every Good Decision	
Before Class Deliverable			
Summary	HBR	How to Design Smart Experiments (Feb 2009) [dropbox - individual]	5pm 7-01
Summary	HBR	The Discipline of Business Experimentation (Dec 2014) [dropbox - individual]	5pm 7-01
After Class Deliverable			
Lab	FE1	Complete lab assignment [hard copy in class save JMP file to dropbox - student study group]	5pm 7-06
14 M	6-Jul	Semester Project Preparation	
Dig Deeper			
Read	BEGD	Section 3: Leadership Toolkit - Chapters 7-11, Behind Every Good Decision	
Before Class Deliverable			
Summary	FC	The Messy Business of Reinventing Happiness http://www.fastcompany.com/3044283/the-messy-business-of-reinventing-happiness#!	5pm 7-06
Summary	McK	Big data; What's your plan?	5pm 7-06
15 W	8-Jul	Semester Project Presentations	
M	13-Jul	Take Home Exam Due 6pm	

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	Legend:		
	BAH >	Field Guide to Data Science Booz - Allen - Hamilton	
	BEGD>	Behind Every Good Decision Jain & Sharma	
	BusStat >	Business Statistics, 3ed Sharpe, et al	
	DSB >	Data Science for Business Provost & Fawcett	
	FPP >	Forecasting: principles and practice Hyndman & Athanasopoulos	
	HBR>	Harvard Business Review	
	ISL >	An Introduction to Statistical Learning James, et al	
	JMP>	JMP Book > Help > Books > [select]	
	MCK >	McKinsey Global Institute	
	MIT>	MITsloan Management Review	
	S+B>	Strategy+Business	