

# Business Analytics Foundations (MKTG 625)

## Course Syllabus – Fall 2017 Semester

Radford University  
College of Business and Economics  
Department of Marketing

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**OFFICE HOURS:** Monday & Wednesday 12:00 – 1:00 p.m. Wednesday 5:00 – 6:00 p.m. I am also around outside of my scheduled office hours either in-person or virtually. If you need to see me and you can't make it to my office hours, contact me and we can schedule (1) an in-person meeting (or if you're in the neighborhood, just stop by -- if I'm in, my door is usually open), (2) a phone call, or (3) an online meeting using Skype or Adobe Connect.

**TIME/PLACE:** Section 1: Wednesday, 6:30 – 9:30 p.m. – COBE Trading Room (KH 215).

**PREREQUISITES:** Graduate standing, a desire to learn and a willingness to work.

**REQUIRED TEXT:** *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie or Die* (2016) – ISBN 978-1119145677 – Author: Eric Siegel. This book is not available from the University bookstore but can be purchased from online booksellers such as Amazon.com. Please make sure you purchase the 2<sup>nd</sup> edition of the book published in 2016 and not the first edition (from 2013).

Other readings will be posted on the course D2L site.

You will also need to pay \$75 for the Microsoft Office Specialist (MOS) exam as this is a part of this course (see information provided under Examinations in the Course Evaluation, Grading & Important Dates portion of the syllabus). You will be given access to the GMetrix software to help prepare your for the exam. I will also provide you with a variety of online resources and videos to help prepare you for the exam. However, if you do not have a great deal of experience with Excel or want more training, you may want consider purchasing an Excel book such as: *Microsoft Excel 2016 Bible: The Comprehensive Tutorial Resource* (2016) by John Walkenbach (ISBN: 978-1119067511; Publisher: Wiley) -- this particular book is a very comprehensive resource (and will cover far more than necessary to pass the specialist exam). Please note, though, that you should not need additional texts to pass the certification exam.

**COMPUTER:** You will need a computer that runs a recent version of the Windows Operating System (Windows 8 or higher). You will also need to have Microsoft Office 2016 installed on your computer. These are now requirements for students in the Radford University MBA program and are a requirement for this course. You will be using SAS Studio and SAS Enterprise Guide via SAS OnDemand. This requires a Windows operating system. If you have a Mac and you do not wish to set it up to run Windows, you will either have to (1) use computer labs on the Radford University campus, (2) borrow a laptop that meets these requirements, or (3) purchase a laptop meets these requirements.

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## **COURSE DESCRIPTION**

This course is an introduction to the field of Business Analytics and its extensive use of exploratory and predictive models in providing fact-based recommendations to assist management in optimizing decisions and actions. This course also covers: online transaction processing (OLTP), online analytical processing, (OLAP), relational databases and models, structured query language (SQL), data warehouses and data marts, and dimensional models. Base SAS, SAS Studio, and Enterprise Guide are used extensively via SAS OnDemand.

## **FOUNDATIONS FOR THIS COURSE**

This course supports the mission and vision of the College of Business and Economics at Radford University:

- Mission of the College of Business and Economics: The mission of the COBE is to provide an active learning environment that develops analytical and innovative business professionals for the dynamic global economy
- Vision of the College of Business and Economics: The newly adopted vision states “We will be recognized for challenging minds, cultivating talents, and connecting people in a technology-rich learning environment.”

## **WHY BUSINESS ANALYTICS?**

Analytics is both an art and a science to discover and understand historical patterns in a company’s data in order to predict and improve business performance under forecasted environmental, economic, and competitive conditions. The newly adopted COBE focus on analytics emphasizes the need for MBA students to have a foundational course in business analytics that intersects business knowledge with technical acumen and is focused on the technical background, tools and techniques that provide the foundation for the analysis of big data.

Firms operate in an increasingly challenging business environment, with greater competition, more informed customers and rapidly changing market trends. Simultaneously, they also have access to more information about their customers, the marketplace and their competitors than ever before. There has been an exponential growth in data generated from internal and external databases, store scanners, customer transactions, web navigation, online search, and more recently, social media but most companies do not know how to best use this data. Thus, it is imperative that all business professionals understand the data available to them and how to most effectively make use of it. In this environment, knowing how to use this information to make optimal business decisions is a crucial competitive advantage and companies are, as a result, seeking trained professionals who have the skills to analyze the data to help managers make better marketing decisions. But the reality is: **the demand for individuals grounded in Analytics far exceeds the supply of graduates. Analytics is seeing demand outpacing the supply of talent!** The U.S. Bureau of Labor Statistics predicts that there will be a 24 percent increase in demand for professionals with management analysis skills over the next eight years; and McKinsey Global Institute Predicts there will be a

shortage of talent necessary for organizations to take advantage of Big Data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions. On August 27, 2017 (at 12:15 p.m.) there were a total of 162,545 jobs advertised on LinkedIn and, of those, more than 91,374 (or 56%) were for entry level (people with a baccalaureate degree and limited experience) or associate level (graduate degree or 3-5 years of experience) as is shown in the table below:

### Analytics U.S. Position Ads on LinkedIn\*

Area of Analytics	Entry or Associate**	All Levels
All Analytics Position Ads	91,374	162,545
Financial Analytics	32,862	65,837
Digital/Web Analytics	24,336	48,429
Data Analytics	18,866	33,950
Media Analytics	14,370	27,259
Healthcare Analytics	15,117	25,384
HR/Talent Analytics	11,182	24,208
Marketing Analytics	12,109	20,498
Supply Chain Analytics	8,384	17,461
Social Media Analytics	8,904	15,978
Pricing Analytics	4,577	9,753
Credit Analytics	4,684	8,754
Business Analytics	3,083	6,285
Fraud Analytics	2,346	3,755

\*Data Captured at 12:15 p.m. on Aug 27, 2017

\*\*Associate Level generally requires 3-5 years of experience or an MBA or other Advanced Degree

Note: All of the items in yellow are marketing-related areas

The table below displays employer demand from the 2017 Corporate Recruiters Survey<sup>1</sup> which is a product of the Graduate Management Admission Council® (GMAC®), and the owner of the Graduate Management Admission Test® (GMAT®) for recent graduate business hires by job function and job level placement within each function. In 2017, 71 percent of employers indicated they will fill marketing, finance, and business development positions with a recent MBA or other specialized business master's graduate. Data analytics was second place in the list of job functions employers most seek to fill in 2017, with 69 percent of employers planning to hire recent graduates to occupy these roles (up from 51% in 2015).

<sup>1</sup> **Corporate Recruiters Survey 2017 – Survey Report**, Graduate Management Admission Council (GMAC), (2017) <http://www.gmac.com/market-intelligence-and-research/research-library/employment-outlook/2017-corporate-recruiters-survey-report.aspx>

## 2017 Employer Demand for Graduate Business Hires\*

Job Function	Companies Worldwide	Fortune Global 100	Fortune Global 500	Publicly Traded	Start-Up	Family-Owned
Marketing	71%	94%	84%	81%	72%	79%
Finance	71%	94%	86%	84%	66%	80%
Business Development	71%	91%	84%	78%	80%	73%
Data Analytics	69%	92%	81%	75%	71%	71%
Consulting	66%	73%	73%	62%	64%	63%
Operations/Logistics	65%	93%	80%	76%	66%	78%
Accounting	65%	86%	70%	66%	63%	69%
IT/Systems	65%	85%	74%	71%	64%	74%
General Management	64%	88%	82%	73%	61%	76%
Human Resources	61%	90%	79%	73%	48%	75%
Investment Banking	50%	65%	57%	56%	57%	61%

\* Percentages in columns do not sum to 100 due to multiple selections

Data analytics was consistently in high demand in the United States (where it was tied for first with Marketing and Finance) as well as in other regions (see table below).

## Function Demand by Region\*

Job Function	Companies Worldwide	United States	Asia-Pacific	Europe	Latin-America
Marketing	71%	68%	84%	72%	74%
Finance	71%	68%	74%	82%	75%
Business Development	71%	67%	88%	71%	77%
Data Analytics	69%	68%	79%	68%	68%
Consulting	66%	66%	80%	59%	66%
Operations/Logistics	65%	60%	83%	65%	77%
Accounting	65%	60%	84%	67%	69%
IT/Systems	65%	61%	81%	68%	70%
General Management	64%	65%	77%	51%	58%
Human Resources	61%	53%	88%	61%	73%
Investment Banking	50%	46%	76%	51%	52%

\* Percentages in columns do not sum to 100 due to multiple selections

Historically, companies have hired graduates trained in statistical and/or quantitative methods who use tools such as Excel, SQL, R, SAS or SPSS to manipulate data and create decision models from databases. The problem is that such hires often lack an understanding of fundamental business decisions and the key drivers of consumer purchase behavior. Companies today seek a new breed of graduates -- MBA graduates fully grounded in business principles, but who also possess the analytical skills to develop better decision models and create more accurate predictions of customers' response to business decisions. Analytics drives organizational insights. Insights lead to greater understanding of customers and markets; that understanding yields innovative products and services, better customer targeting, improved pricing, and superior growth in both revenue and profits. That's why today's companies are viewing Analytics and employees who can create and use them as essential for creating value. This assessment was recently confirmed by the GMAC. GMAC researchers asked employers when conducting their 2016 Corporate Recruiters Survey to describe the specific skills and requirements they seek when hiring for data analytics positions.

"Not surprisingly, many report that they need graduates with strong analytical and programming skills, particularly in the frequently mentioned programs of Excel, SAS, R,



The course will be taught using a variety of materials and exercises including lectures for key concepts and processes, as well as applied demonstrations and applications to enhance student understanding and skill. Students will also acquire a managerial understanding of analytics applications in business decision through hands-on use of cutting edge Business Analytics tools and software.

**At the conclusion of the semester, you will be able to:**

- Explain the basic language and concepts within the field of analytics;
- Discuss the implications of big data on business and business decision-making;
- Evaluate various approaches and criteria in adoption and utilization of analytics to support corporate or functional decisions;
- Critique the different types of data being used in analytics and their nuances;
- Explain the difficulties presented by massive, opportunistic data;
- Critique the types of questions that can be addressed by using analytics;
- Critically evaluate, analyze and interpret information to solve problems and make business decisions;
- Explain the use of relational databases, data warehouses and data marts;
- Evaluate warehoused information to determine if the premises are valid, to identify key facts and arguments, and to determine what appropriate Analytics should be used to assist management in both strategic and tactical decisions;
- Evaluate and apply: online transaction processing (OLTP), online analytical processing (OLAP), relational databases and models, structured query language (SQL), data warehouses and data marts, and dimensional models;
- Create reports using various data visualization tools including pivot tables;
- Critically evaluate and explain the legal, ethical and privacy issues concerns surrounding analytics.

This course also supports the needs and expectation of corporate recruiters when hiring MBA graduates.<sup>3</sup> Specifically this course will focus on the needs of employers in the following areas:

- **Communication:** Oral communication, Listening Skills, Written Communication, Presentation Skills
- **Teamwork:** Adaptability, ability to value opinions of others, cross-cultural sensitivity, ability to follow a leader
- **Technical:** Quantitative analysis, Qualitative analysis, core business knowledge, technology, specific software and computer language skills
- **Managerial:** managing decision-making process, managing task environment, managing strategy and innovation, managing human capital, managing administrative activities

## **COURSE EVALUATION, GRADING & IMPORTANT DATES**

You will be evaluated on your knowledge of analytics and your ability to apply that knowledge effectively. Your performance will be evaluated by means of examinations, assignments, and your level of engagement in the class (participation). Specifically, the weights assigned to each of these performance measures (as well as the associated dates) are:

- Mid-Term Exam (30%) – due no later than 8 a.m. on Monday, October 16, 2017. This will be a take home exam.

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<sup>3</sup> "Corporate Recruiters Survey", Graduate Management Admission Council, 2014.

- Final Exam (30%) – there will be two components to the final exam:
  - Microsoft Office 2016 Excel Expert Certification (12%): This will be administered during the course final exam period (6:30 p.m.) on Wednesday, December 13, 2017. I will also provide a couple of other times during the last 2 weeks of the semester for anyone who would like to take the certification earlier.
  - Take Home Component (18%). Due no later than 6:30 p.m. on Wednesday, December 13, 2017.
- Student Engagement (30%) – This includes assignments (both during and outside of class) that apply various concepts and use software applications throughout the semester, participation in in-class discussions, and your overall professionalism. Your 10 weekly article submissions on LinkedIn are also included in this portion of the grade.
- LinkedIn Analytics Article (10%) – due no later than 6:30 p.m. on Wednesday, November 29, 2017.

Your final grade will be strictly determined as follows:

Grade	Percentage
A	93.00% +
A-	90.00% - 92.99%
B+	87.00% - 89.99%
B	83.00% - 86.99%
B-	80.00% - 82.99%
C	70.00% - 79.99%
F	Below 70%

**Mid-Term Examination.** The mid-term exam will be a take home exam that will consist of a written portion and an applications portion. Since you will be able to complete the exam on your own, you will be able to use your notes, readings, etc. Please note, however, that take home exam components meet the same honor code requirements as in-class exams and you may not collaborate with others on the exam. You will be given a minimum of 10 days to complete the exam.

**Final Exam.** Your final exam will consist of two components: (1) the Microsoft Office Excel 2016 Expert Certification and (2) a take home exam.

Microsoft Excel 2016 Expert Certification. Certifications are a way of setting yourself apart from others in the job market and provide third-party verification that you possess the skill. Excel Expert assumes a higher level of knowledge than Excel Specialist. Companies in the analytics arena expect you to possess strong skills in Excel and possessing a certification provides them with “proof of purchase”. You have 50 minutes to complete the exam.

You must receive a score of 700 (out of 1000) to pass each part of the certification exam. However, passing the certification is not a requirement for completing and passing the course (although the grade you receive on the certification will impact your final semester grade). If you do not pass one part of the certification, you may choose to retake it (this must be done no later than Friday, December 15, 2017 and you will need to work out a time to take it with me so I can set up proctoring for your exam). You must pay the exam fee of \$75 each time you take the exam.

Take Home Exam. The take home component of the final exam will consist of a written portion and an applications portion. Since the exam will be able to be completed on your own, you will be able to use your notes, readings, etc. Please note, however, that take home exam components meet the same honor code requirements as in-class exams and you may not collaborate with others on the exam. The exam will be due no later than the beginning of the final exam period for the course (as shown). You will be given a minimum of 7 days to complete the exam.

**Student Engagement.** In order to reinforce key course concepts, each student will be involved in class discussions as well as content-related assignments and exercises. As you can see from the percentage of the course grade, these discussions and assignments are critically important to the course.

Please note that while I have no problem with students discussing homework assignments and helping each other with problems (as this is part of the learning process as well), the work turned in must be your work. Simply copying another student's work or re-running their code is unacceptable and in violation with the RU Honor Code. If I suspect that there is an honor code violation, I will assign a grade of zero (0) for that assignment. Any subsequent violations will be handled in accordance with the university honor code system.

All assignments are due at the date and time specified - **no late assignments will be accepted for credit** (unless discussed with me in advance). While I encourage you to do any missed assignments for your own learning (and because some assignments build upon earlier assignments), you cannot make-up missed assignments for credit. Because of the nature of the course, there will be no additional or extra credit assignments to increase your grade.

You are expected to be an active contributor to class discussions – your participation is vital in an online class. I will keep track of your contributions throughout the semester. I also expect you to be professional in behavior in interacting with me and with others. Your final class engagement grade for the semester will be based on a review of your participation and overall professionalism for the semester. Please keep in mind, however, that quantity in this area does not necessarily equate to quality. You will be evaluated on the quality of your contributions.

**Analytics Self-Selected Focus.** In addition to the readings assigned for the course, you will be asked to identify an area in analytics that interests you or you believe will help you in your future career plans. Some areas to consider in analytics include customer acquisition/CRM, marketing, advertising, talent/HR, fraud detection, real estate, law enforcement, finance, education, banking, web, retail, sports, social, political, etc. (there are other areas as well). You need to pick a single area and focus on this for the semester so make sure you think your topic through and do not some initial research to ensure there are current articles available before you start.

- Provide a summary (no more than 600 characters) on LinkedIn for 1 article beginning with the 3<sup>rd</sup> week of the semester. The article must be a recent article written within the 18 months. You must post the summary no later than 6:30 p.m. each Wednesday (your first summary is due on September 13<sup>th</sup>). You will do this for 10 weeks (the last submission will be due on November 15<sup>th</sup>). The summary should be engaging and something that makes a person want to read further. It can often be more difficult to post a brief summary that is engaging and descriptive than it is to write a longer summary. As a part of this summary (and the 600 characters), you must also provide a link to the article. **In addition to posting the summary on LinkedIn, you must also email me a screenshot of your LinkedIn post along with a hyperlink to the article (so I can read it) before the weekly 6:30 p.m. deadline. I have over 1000 connections on LinkedIn so I don't want to miss your post on my feed.** An example email would look like:



**Angela Stanton**  
Professor of Marketing and Marketing Research & Analytics Professional

Many articles fixate on the failure of the HR dept. to adapt to their changing role in the data analytics movement, but how many businesses are truly ready for HR analytics teams? Are they willing to embrace HR as a strategic partner? Do they understand that generating a report doesn't show strategic ability? Expert analysis of the data and producing bottom line results does. Allow your analytical team access to vital business information and trust their expertise to foster results. Don't be scared to let your analytical team perform the job you hired them to do!



Stop hiring data scientists until you're ready for data science  
venturebeat.com

Article: <https://venturebeat.com/2015/07/22/stop-hiring-data-scientists-until-youre-ready-for-data-science/>

**LinkedIn Analytics Article.** Rather than writing an academic paper, I would like to assist with you in your professional development by having you prepare an article that will be published on LinkedIn. Employers are increasingly asking for writing samples so this will be a way for you have this at the ready. Sharing professional content on LinkedIn also increases your visibility, enhances your professional reputation, and positions you as an influencer/thought leader. The focus of your article should be your perspectives on analytics, its impact, where you see it going, etc. This is NOT a traditional academic term paper where you look for articles and summarize them – this is all about you, your opinions and your insights. There should be no citations as I expect this to be your original work that is not based on the writings of others. Your article must be a minimum of 1500 words. You must provide me a link you your published article no later than the beginning of class on Wednesday, November 29, 2017. I encourage you to look around LinkedIn to see how other articles are structured. Other resources include:

- <https://www.linkedin.com/help/linkedin/answer/47445>
- <http://okdork.com/linkedin-publishing-success/>
- <https://www.themuse.com/advice/how-to-write-a-linkedin-article-if-youre-not-a-writer-and-still-sound-credible>

## Planned Semester Schedule\*

<b>Week/Date</b>	<b>Topic(s) &amp; Due Dates</b>
1: August 30 <sup>th</sup>	Business Analytics Overview
2: September 6 <sup>th</sup>	The Analytics Process; Data – The Foundation of Analytics
3: September 13 <sup>th</sup>	Storage & Manipulation of Data: Databases, Data Warehouse/Marts, Data Lakes
4: September 20 <sup>th</sup>	Data Querying & Reporting
5: September 27 <sup>th</sup>	Data Querying & Reporting
6: October 4 <sup>th</sup>	Data Querying & Reporting
7: October 11 <sup>th</sup>	Data Querying & Reporting
October 16 <sup>th</sup>	<b>Mid-Term Exam Due</b>
8: October 18 <sup>th</sup>	Exploring Data & Descriptive Statistics
9: October 25 <sup>th</sup>	Exploring Data & Descriptive Statistics
10: November 1 <sup>st</sup>	Data Visualization
11: November 8 <sup>th</sup>	Data Visualization
12: November 15 <sup>th</sup>	Data Visualization
November 22 <sup>nd</sup>	<b>Thanksgiving Break – No Classes</b>
13: November 29 <sup>th</sup>	Data Visualization; <b>Analytics Article Due</b>
14: December 6 <sup>th</sup>	Privacy, Ethical & Legal Issues in Analytics
December 13 <sup>th</sup>	<b>Take Home Final Exam Due, Excel Expert Certification Exam</b>

\*This is the planned schedule. Timing of topic coverage may be adjusted as necessary to enhance student learning.