SYRACUSE UNIVERSITY
WHITMAN SCHOOL OF MANAGEMENT

Course Syllabus

SCM 651 – Business Analytics

Textbooks: A series of books is available as references at the end of this syllabus. No books are required to be purchased for this course.

Software: All software is available via remote access through the website remote.whitman.syr.edu. No software is required to be purchased for this course.

Course Overview and Learning Objectives

This course is intended for the graduate student who is interested in developing a portfolio of skills in business analytics.

The course learning objectives include:

1. Data collection: use tools to collect and organize data (e.g., Google Analytics)
2. Data analysis: identify patterns in the data via visualization, statistical analysis, and data mining
3. Strategy and decisions: develop alternative strategies based on the data
4. Implementation: develop a plan of action to implement the business decisions

Class discussions will be based on case situations and on articles from business and technical publications. The class will include substantial hands-on work in data collection, analysis, and interpretation.

Course Format

Classes will include a mixture of hands-on lab sessions and case discussions. The course readings will serve as the basis for live discussion on basic business analytics. Lab sessions will focus on learning skills required for data analysis.

Grading

Grades will be based on four components:

1. Homework Assignments 1–4 (50%): There are four homework assignments focusing on the skills necessary to perform business analytics. Homework assignments are to be completed as a group assignment. No collaboration between teams is allowed on group assignments. Submitted assignments must be original work from the team. Every member of a group should submit the homework assignment. Instructions are available in the Toolbox.
2. Team Peer Review (10%): The peer review score is your teammates' evaluation of your contribution to the group homework assignments. The average peer review score will be no higher than 80%. Instructions are available in the Toolbox.
3. Final Exam (35%): The final exam is an individual assignment. No discussion or collaboration with anyone else is allowed. Exam submissions must be original work from the individual. The exam will be taken during the week 11 live session.
4. Class Participation (5%): You are expected to prepare for each class, participate actively in the discussion of material, and contribute to the learning experience of the group. Attendance does not count for participation, but participation is not possible without attendance. The average class participation score will be no higher than 80%.

Assignments

Assignment	Individual or Group	Percent	
		Individual	Group
1. Homework Assignment 1: Data visualization, correlation, and regression (100 points)	Group		12.5%
2. Homework Assignment 2: Google Analytics (100 points)	Group		12.5%
3. Homework Assignment 3: Demand modeling and price optimization (100 points)	Group		12.5%
4. Homework Assignment 4: Customer choice (logit, probit, neural networks) (100 points)	Group		12.5%
6. Team Peer Review	Individual	10%	
7. Final Exam	Individual	35%	
8. Class Participation	Individual	5%	
	Total	**50%**	**50%**

Grading Curve

The projected grading curve is shown below. This curve may be adjusted depending on the class performance. The lower end of each grade range will not be raised (e.g., 95% will be an A, 92% will be at least an A–, etc.).

Grade Distribution	
A	95.0–100.0
A–	92.0–94.99
B+	90.0–91.99
B	82.0–89.99
B–	75.0–81.99
C+	72.0–74.99
C	65.0–71.99

If a student requests that part an assignment be regraded, then the entire assignment will be regraded. Historically, half of regrades increase the score, half decrease the score.

University and School Policies

Attendance policy

Attendance in classes is expected in all courses at Syracuse University. It is a federal requirement that faculty promptly notify the university of students who do not attend or cease to attend any class. Faculty will use Early-Semester Progress Reports and Mid-Semester Progress Reports in Orange SUccess to alert the Registrar and Financial Aid Office on non-attendance. For more information visit:

Faculty: Information for Faculty: Non-attendance or Stopped Attending
Students: Information for Students: Non-attendance or Stopped Attending

If a student is unable to participate in-person or virtually for an extended period of time (48 hours or more), the student may request an absence notification from their home school/college Dean's Office or the Dean of Students Office. Instructors will be notified via the "Absence Notification" flag in Orange Success.

Students are allowed to miss one live class session without penalty. Additional absences will be penalized.

Academic integrity policy

Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy holds students accountable for the integrity of all work they submit and for upholding course-specific, as well as university-wide, academic integrity expectations. The policy governs citation and use of sources, the integrity of work submitted in exams and assignments, and truthfulness in all academic matters, including course attendance and participation. The policy also prohibits students from: 1) submitting the same work in more than one class without receiving advance written authorization from both instructors and, 2) using websites that charge fees or require uploading of course materials to obtain exam solutions or assignments completed by others and present the work as their own. Under the policy, instructors who seek to penalize a student for a suspected violation must first report the violation to the Center for Learning and Student Success (CLASS). Students may not drop or withdraw from courses in which they face a suspected violation. Instructors must wait to assign a final course grade until a suspected violation is reviewed and upheld or overturned. Upholding Academic Integrity includes abiding by instructors' individual course expectations, which may include the protection of their intellectual property. Students should not upload, distribute, or otherwise share instructors' course materials without permission. Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered, as described in the Violation and Sanction Classification Rubric. Students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

A violation of the academic integrity policy, use of work not your own, or collaboration with others will result in a grade of zero on any assignment or exam where a violation is identified and will be reported to the academic integrity office.

The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level.

All academic integrity expectations that apply to in-person quizzes and exams also apply to online quizzes and exams. In this course, all work submitted for quizzes and exams must be yours alone. Discussing quiz or exam questions with anyone during the quiz or exam period violates academic integrity expectations for this course.

Using websites that charge fees or require uploading of course material to obtain exam solutions or assignments completed by others and present the work as your own violates academic integrity expectations in this course.

Work produced by students as part of this course may be used for educational purposes.

It is understood that registration for and continued enrollment in this course constitutes permission by the student to use his or her works for educational purposes. In compliance with the federal Family Educational Rights and Privacy Act, works in all media produced by students as part of their course participation at Syracuse University may be used for educational purposes, provided that the course syllabus makes clear that such use may occur.

Disability services

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Religious Observances

SU's religious observances policy, found at http://supolicies.syr.edu/emp_ben/religious_observance.htm, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances from the first day of class until the end of the second week of class. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations.

Discrimination or Harassment

The University does not discriminate and prohibits harassment or discrimination related to any protected category including creed, ethnicity, citizenship, sexual orientation, national origin, sex, gender, pregnancy, disability, marital status, age, race, color, veteran status, military status, religion, sexual orientation, domestic violence status, genetic information, gender identity, gender expression or perceived gender.

Any complaint of discrimination or harassment related to any of these protected bases should be reported to Sheila Johnson-Willis, the University's Chief Equal Opportunity & Title IX Officer. She is responsible for coordinating compliance efforts under various laws including Titles VI, VII, IX and Section 504 of the Rehabilitation Act. She can be contacted at Equal Opportunity, Inclusion, and Resolution Services, 005 Steele Hall, Syracuse University, Syracuse, NY 13244-1120; by email: titleix@syr.edu; or by telephone: 315-443-0211.

Federal and state law, and University policy prohibit discrimination and harassment based on sex or gender (including sexual harassment, sexual assault, domestic/dating violence, stalking, sexual exploitation, and retaliation). If a student has been harassed or assaulted, they can obtain confidential counseling support, 24-hours a day, 7 days a week, from the Sexual and Relationship Violence Response Team at the Counseling Center (315-443-8000, Barnes Center at The Arch, 150 Sims Drive, Syracuse, New York 13244). Incidents of sexual violence or harassment can be reported non-confidentially to the University's Title IX Officer (Sheila Johnson Willis, 315-443-0211, titleix@syr.edu, 005 Steele Hall). Reports to law enforcement can be made to the University's Department of Public Safety (315-443-2224, 005 Sims Hall), the Syracuse Police Department (511 South State Street, Syracuse, New York, 911 in case of emergency or 315-435-3016 to speak with the Abused Persons Unit), or the State Police (844-845-7269). I will seek to keep information you share with me private to the greatest extent possible, but as a professor I have mandatory reporting responsibilities to share information regarding sexual misconduct, harassment, and crimes I learn about with the University's Title IX Officer to help make our campus a safer place for all.

Email Policy

Syracuse University has established email as a primary vehicle for official communication with students, faculty, and staff. Emergency notifications, educational dialog, research, and general business correspondence are all consistently enhanced in institutions of higher learning where email policies exist and are supported by procedures, practice, and culture.

An official email address is established and assigned by Information Technology Services (ITS) for each registered student, as well as for all active faculty and staff members. All University communications sent via email will be sent to this address.

Class Schedule

The topics, readings and assignments for each class session are listed on the following pages. Special topics will be added to the schedule as time permits.

Professionalism

To maintain a level of professionalism, cell phone usage is not permitted during regular class lectures sessions.

Other Issues

- For fairness reasons, there will be no additional assignment for extra credit. The best way to achieve a good grade is to put decent effort into each assignment.

SCM 651 – Business Analytics

- **Class Schedule**

Session	Asynchronous (recorded)	Synchronous (live)
Week 1	**Course background** • What is business analytics? • How can business analytics be applied? • Who uses business analytics? **Hands-on: Excel data visualization** • Navigation • Calculations and formulas • Summarizing with sparklines • Graphing and visualization • Lookup • Sorting and filters • Pivot tables and charts • 3D mapping **Hands-on: Excel data manipulation** • Tables • Math and text operators • Index and match	**Review of syllabus and assignments** **Articles: see instructions on page 8** 1. "Business Analytics Insight: Hype or Here to Stay?" Hugh Watson, *Business Intelligence Journal*, 2015 2. "GE and the Culture of Analytics," Renee Boucher Ferguson, *MIT Sloan Management Review*, January 2014 3. "Location Analytics: Bringing Geography Back," Renee Boucher Ferguson, *MIT Sloan Management Review*, October 2012
Week 2	**Hands-on: Excel statistics** • Descriptive statistics • Correlations • Univariate regression (linear, exponential, power) • Moving average • Forecasting • Multivariate regression • Categorical variables • Prediction models • Sensitivity analysis • Conditional formatting **Hands-on: Excel scenarios** • Scenario manager	**Articles: see instructions on page 8** 1. "Sustaining an Analytics Advantage," Peter Bell, *MIT Sloan Management Review*, Spring 2015 2. "Creating Business Value with Analytics," David Kiron and Rebecca Shockley, *MIT Sloan Management Review*, Fall 2011 3. "Raising the Bar with Analytics," David Kiron et al., *MIT Sloan Management Review*, Winter 2014

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Session	Asynchronous (recorded)	Synchronous (live)

Week 3	**Hands-on: Google Analytics**
	• Audience
	  • Demographics
	  • System characteristics
	  • Interests
	  • Geographic
	  • Frequency and recency
	  • Technology
	  • Benchmarking
	• Acquisition
	  • Tracking
	  • AdWords
	  • Behavior
		Articles: see instructions on page 8
		1. "Web Analytics: Enhancing Customer Relationship Management," Nabil Alghalith, *Journal of Strategic Innovation and Sustainability*, May 2015
		2. "How eBay Uses Data and Analytics to Get Closer to Its (Massive) Customer Base," Renee Boucher Ferguson, *MIT Sloan Management Review*, June 2013

Week 4	**Hands-on: Access—data structure and queries** • Importing data • Relationships between tables • Solving dirty data problems • Queries with Query Design **Hands-on: Structured Query Language (SQL)** • SQL command overview • Selecting data with SELECT and FROM • Sorting using ORDER BY • Criteria using WHERE • Boolean operators • Mathematical operations • Grouping using GROUP BY • Queries on multiple tables • IN option • LIKE option • HAVING command • Subqueries • Limiting results • Concatenation • Joins	**Articles: see instructions on page 8** 1. "Minding the Analytics Gap," Sam Ransbotham et al., *MIT Sloan Management Review*, Spring 2015 2. "Innovating with Analytics," David Kiron et al., *MIT Sloan Management Review*, Fall 2012 **Homework Assignment 1: Regression due before the start of class**

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Session	Asynchronous (recorded)	Synchronous (live)
Week 5	**Hands-on: Excel—Power Pivot** • Importing data • Relationships • Properties and filters • Refreshing data • Power Pivot tables • Slicers and Timelines • Power Pivot charts **Hands-on: Excel—Power Query** • Importing data from external sources • Relationships • Generating Power Pivot tables • Power Query example using websites	**Articles: see instructions on page 8** 1. "Innovating with Airborne Analytics," David Kiron, *MIT Sloan Management Review*, Fall 2015 2. "A New, Analytics-Based Era of Banking Dawns at State Street," Renee Boucher Ferguson, *MIT Sloan Management Review*, Summer 2014

Week 6	**Hands-on: Excel optimization**
	• Goal Seek
	• Unconstrained solver
	• Useful functions
	• Optimization options
	  o Linear (simplex)
	  o GRG nonlinear
	  o GRG nonlinear with Multistart
	  o Evolutionary
	• Optimal product mix
	• Workforce scheduling
	• Transportation and distribution
	• Capital budgeting
	• Warehouse location (one warehouse)
	• Warehouse location (two warehouses)
		Articles: see instructions on page 8
		1. "Modern Analytics and the Future of Quality and Performance Excellence," James Evans, *The Quality Management Journal*, 2015
		2. "A Process of Continuous Innovation: Centralizing Analytics at Caesars," Renee Boucher Ferguson, *MIT Sloan Management Review*, July 2013
		
		Homework Assignment 2: Google Analytics due before the start of class

Week 7	**Hands-on: Basic R**
	• Loading and viewing data
	• Histograms, boxplots, scatter plots, mean plots, XY plots
	• 3D graphs
	• Statistical summaries
	• Correlations
	• ANOVA
	• Regression
	  • Dummy variables
	  • Moderating effects
		Articles: see instructions on page 8
		1. "Big Data in Health Care: Using Analytics to Identify and Manage High-Risk and High-Cost Patients," David Bates et al., *Health Affairs*, 2014
		2. "A Review of Analytics and Clinical Informatics in Health Care," Allan Simpao et al., *Journal of Medical Systems*, April 2014

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Session	Asynchronous (recorded)	Synchronous (live)
Week 8	**Hands-on: Advanced R** • Logit • Probit • Perceptrons • Neural networks • Neural networks with linear outputs • Deep learning	**Articles: see instructions on page 8** 1. "An Introduction to Data Mining and Other Techniques for Advanced Analytics," Parry Leventhal, *Journal of Direct, Data and Digital Marketing Practice*, Oct–Dec 2010 **Homework Assignment 3: Price Optimization due before the start of class**
Week 9	**Hands-on: Intermediate R** • Regression assumptions, diagnostics, corrections o Linearity • RESET test • Box-Cox and Box-Tidwell o Multicollinearity • VIF test • Factor analysis o Heteroscedasticitiy • Breusch-Pagan test • Huber regression o Serial correlation • Durbin-Watson test • Prais-Winsten o Outliers • Bonferroni test • Benford's law • K-means clustering	**Articles: see instructions on page 8** 1. "What Businesses Can Learn from Sports Analytics," Thomas Davenport, *MIT Sloan Management Review*, Summer 2014 2. "Team GB: Using Analytics (and Intuition) to Improve Performance," Renee Boucher Ferguson, *MIT Sloan Management Review*, Spring 2013

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Session	Asynchronous (recorded)	Synchronous (live)
Week 10	**Hands-on: Tableau** • Connecting to data • Creating relationships • Building worksheets • Calculations • Filters • Dashboards • Stories Tableau's data visualization software is provided through the Tableau for Teaching program. **Hands-on: MS Power BI** • Connecting to data • Creating relationships • Building worksheets	**Articles: see instructions on page 8** 1. "Business Analytics: Transforming the Role ofManagement Accountants," Kristine Brands, *Management Accounting Quarterly*, Spring 2015 2. "Elevating Data, Analytics to the C-Suite,"Renee Boucher Ferguson, *MIT Sloan Management Review*, Summer 2014 **Homework Assignment 4: Customer Choice (logit and probit) due before the start of class**
Week 11 Final Exam		**Final exam will take place in the live session.**

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Instructions to Access Articles at Syracuse Library

1. Go to https://library.syr.edu/.
2. Click Recommended Database: ProQuest.
3. Log in with your Syracuse NetID (first part of your email address) and password.
4. Search for the article using the title.

Reference Textbooks:

Business Analytics (general)

1. Lin, Nathaniel. *Applied Business Analytics: Integrating Business Process, Big Data, and Advanced Analytics*, 1st ed. 2015.
2. Watson, Michael, and Derek Nelson. *Managerial Analytics: An Applied Guide to Principles, Methods, Tools, and Best Practices*,1st ed. 2013. (recommended)
3. Bartlett, Randy. *A Practitioner's Guide to Business Analytics: Using Data Analysis Tools to Improve Your Organization's Decision Making and Strategy*. 2013. (recommended)
4. Maisel, Lawrence S., and Gary Conkins. *Predictive Business Analytics: Forward Looking Capabilities to Improve Business Performance*. 2014.
5. Liebowitz, Jay. *Big Data and Business Analytics*. 2013.
6. Prajapati, Vignesh. *Big Data Analytics with R and Hadoop*. 2013.
7. Davenport, Thomas H. *Competing on Analytics: The New Science of Winning*. 2007.
8. Surma, Jerzy. *Business Intelligence*. 2011.
9. Minelli, Michael, Michele Chambers, and Ambiga Dhiraj. *Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses*. 2013.
10. Sathi, Arvind. *Big Data Analytics: Disruptive Technologies for Changing the Game*. 2013.
11. Siegel, Eric. *Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die*. 2013.
12. Miller, Thomas W. *Modeling Techniques in Predictive Analytics: Business Problems and Solutions with R*. 2013.
13. Carlberg, Conrad. *Decision Analytics: Microsoft Excel*. 2013.
14. Provost, Foster, and Tom Fawcett. *Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking*. 2013.
15. Hardoon, David R., and Galit Shmueli. *Getting Started with Business Analytics: Insightful Decision-Making*. 2013.
16. Isson, Jean-Paul, and Jesse Harriott. *Win with Advanced Business Analytics: Creating Business Value from Your Data*. 2012.

Data Visualization

1. Tufte, Edward R. *The Visual Display of Quantitative Information*. 2001.
2. Few, Stephen. *Now You See It: Simple Visualization Techniques for Quantitative Analysis*. 2009.
3. Brunsdon, Chris, and Lex Comber. *An Introduction to R for Spatial Analysis and Mapping*. 2015.

Statistics

1. Lander, Jared P. *R for Everyone: Advanced Analytics and Graphics*. 2013.
2. Ohri, A. *R for Business Analytics*. 2012.
3. Dalgaard, Peter. *Introductory Statistics with R*. 2008.
4. Field, Andy, Jeremy Miles, and Zoe Field. *Discovering Statistics Using R*. 2012.

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Google Analytics

1. Miller, Michael. *Sams Teach Yourself Google Analytics in 10 Minutes*. 2011.
2. Clifton, Brian. *Advanced Web Metrics with Google Analytics*, 3rd ed. 2012.
3. Cutroni, Justin. *Google Analytics*. 2010.
4. Kaushik, Avinash. *Web Analytics 2.0: The Art of Online Accountability and Science of Customer Centricity*. 2009.

Dashboards

1. Walkenbach, John, and Michael Alexander. *Microsoft Excel Dashboards and Reports*. 2013.
2. de Jonge, Kasper. *Dashboarding and Reporting with Power Pivot and Excel*. 2014.
3. Jones, Ben. *Communicating Data with Tableau*. 2014.
4. Murray, Dan. *Tableau Your Data!* 2013.
5. Peck, George. *Tableau 8: The Official Guide*. 2013.

SQL

1. Forta, Ben. *SQL in 10 Minutes, Sams Teach Yourself*. 2012.
2. Holzke, Martin, and Tom Stachowitz. *SQL Database for Beginners*. 2014.
3. ClydeBank Technology. *SQL Quickstart Guide: The Simplified Beginner's Guide to SQL*. 2015.
4. Inc. BarCharts. *SQL Guide (Quickstudy: Computer) Pamphlet*. 2005.

Data Mining

1. Ledolter, Johannes. *Data Mining and Business Analytics with R*. 2013.
2. Zhao, Yanchang, and Yonqhua Cen. *Data Mining Applications with R*. 2013.
3. Zhao, Yanchang. *R and Data Mining: Examples and Case Studies*. 2012.
4. Torgo, Luis. *Data Mining with R: Learning with Case Studies*. 2010.
5. Witten, Ian H., Eibe Frank, and Mark A. Hall. *Data Mining: Practical Machine Learning Tools and Techniques*. 2011.
6. Hoffman, Markus, and Ralf Klinkenberg. *RapidMiner: Data Mining Use Cases and Business Analytics Applications*. 2013.
7. North, Matthew A. *Data Mining for the Masses*. 2012.
8. Shmueli, Galit, Nitin R. Patel, and Peter C. Bruce. *Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner*. 2010.

Fraud Analytics

1. Gee, Sunder. *Fraud and Fraud Detection: A Data Analytics Approach*. 2014.
2. Baesens, Bart, Veronique Van Vlasselaer, and Wouter Verbeke. *Fraud Analytics Using Descriptive, Predictive, and Social Network Techniques: A Guide to Data Science for Fraud Detection*. 2015.

Accounting Analytics

1. Nigrini, Mark. *Forensic Analytics: Methods and Techniques for Forensic Accounting Investigations*. 2011.
2. Nigrini, Mark, and Joseph T. Wells. *Benford's Law: Applications for Forensic Accounting, Auditing, and Fraud Detection*. 2014.
3. Dorrell, Darrell D., and Gregory A. Gadawski. *Financial Forensics Body of Knowledge*. 2012.
4. Manton, Pamela S. *Using Analytics to Detect Possible Fraud: Tools and Techniques*. 2013.

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Marketing Analytics

1. Venkatesan, Rajkumar, Paul Farris, and Ronald Wilcox. *Cutting-Edge Marketing Analytics: Real World Cases and Data Sets for Hands on Learning*. 2014.
2. Putler, Daniel S., and Robert E. Krider. *Customer and Business Analytics: Applied Data Mining for Business Decision Making Using R*. 2012.
3. Winston, Wayne L. *Marketing Analytics: Data-Driven Techniques with Microsoft Excel*. 2014.
4. Sorger, Stephan. *Marketing Analytics: Strategic Models and Metrics*. 2013.
5. Hemann, Chuck, and Ken Burbary. *Digital Marketing Analytics: Making Sense of Consumer Data in a Digital World*. 2013.
6. Lilien, Gary L., Arvind Rangaswamy, and Arnaud De Bruyn. *Principles of Marketing Engineering*. 2012.

Financial Analytics

1. Bennett, Mark J., and Dirk L. Hugen. *Financial Analytics with R: Building a Laptop Laboratory for Data Science*. 2016.
2. Hilpisch, Yves. *Python for Finance: Analyze Big Financial Data*. 2014.
3. Hilpisch, Yves. *Derivatives Analytics with Python*. 2015.
4. Christodoulakis, George, and Stephen Satchell. *The Analytics of Risk Model Validation*. 2007.

Supply Chain Analytics

1. Sanders, Nada R. *Big Data Driven Supply Chain Management: A Framework for Implementing Analytics and Turning Information into Intelligence*. 2014.
2. Fiegin, Gerald. *Supply Chain Planning and Analytics: The Right Product in the Right Place at the Right Time*. 2011.
3. Drake, Matthew J. *The Applied Business Analytics Casebook: Applications in Supply Chain Management,Operations Management, and Operations Research*. 2013.

Entrepreneurship Analytics

1. Croll, Alistair, and Benjamin Yoskovitz. *Lean Analytics: Use Data to Build a Better Startup Faster*. 2013.

Health Care Analytics

1. Davenport, Thomas H., and Dwight McNeill. *Analytics in Healthcare and the Life Sciences*. 2013.