MBAD/DSBA 6278 (U90): Innovation Analytics (IA)

Semester: Spring 2017
Time & Room: Thu 5:30pm-8:15pm @ Center City 801 (Lab)
Course Website: Canvas (canvas.uncc.edu)
Instructor: Professor Sangkil Moon
Instructor's Homepage: https://belkcollegeofbusiness.uncc.edu/smoon13/
Office: Friday Building 249A
Office Hours: Thursday 4:00-5:00pm & 8:15-9:15pm (that is, before & after each class)
@ Center City 801
Friday 10:00-11:00am @ Friday Building 249A
(*In most cases, the best time to talk to me would be right after class.*)
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[Course Description]

For the past few years, **Big Data** has been emerging as an essential tool in doing business. As Big Data of various forms come out rapidly, organizations of various types are trying to make use of this new type of data to achieve competitive advantages against their competitors. For example, using social media (e.g., twitter, facebook) is already a major way to promote products and services, which is named **Social Media Analytics**. After all, in this new environment, organizations cannot compete effectively without understanding how to use a large amount of data coming out of everywhere. To respond to this Big Data business environment, this course is focused on applying Big Data Analytics to innovation and marketing-related problems. Among a variety of Big Data Analytics tools, the primary focus of this seminar is the comprehension and applications of **Text Analytics** as innovative analytical tools to examine unstructured qualitative information (e.g., consumers' text product reviews on social media) coupled with structured quantitative information (e.g., consumers' product ratings, sales). In other words, we want to use real-world innovation and marketing examples to learn about how innovative big data analytics tools can be used to tackle practical business problems. In this context, "Innovation" implies both innovation-related problems and innovative analytics (e.g., Text Analytics, Social Media Analytics) to solve such problems.

[Course Objectives]

The pedagogical philosophy in this course embraces the principle of *learning by doing*. Most concepts that we cover have software (SAS) implementation and an exercise whose solution can be enhanced through empirical analysis. Students are expected to struggle at times, attempting to apply SAS, which is the *learning by doing* process. Unlike most

marketing and innovation courses that focus on conceptual materials, this course provides *quantitative skills* to translate conceptual understanding into specific operational plans.

[Course Pre-Requirements]

- **You should have strong basic statistics knowledge (e.g., standard deviation, correlation, linear regression).**
- The course is primarily composed of hands-on SAS and SPSS operation.

[Optional Course References]

Feldman, Ronen and James Sanger (2007), *The Text Mining Handbook: Advanced Approaches in Analyzing Unstructured Data*, Cambridge University Press.

Hair, Joseph, F. Jr., William C. Black, Barry J. Babin, and Rolph E. Anderson (2010), *Multivariate Data Analysis*, 7th Edition, Prentice Hall.

Dawn Iacobucci (2016), Marketing Models: Multivariate Statistics and Marketing Analytics.

[Disability]

UNC Charlotte is committed to access to education. If you have a disability and need academic accommodations, please provide a letter of accommodation from Disability Services early in the semester. For more information on accommodations, contact the Office of Disability Services at 704-687-0040 or visit their office at Fretwell 230.

[Academic Integrity]

Students have the responsibility to know and observe the requirements of The UNC Charlotte Code of Student Academic Integrity. This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Any special requirements or permission regarding academic integrity in this course will be stated by the instructor, and are binding on the students. Academic evaluations in this course include a judgment that the student's work is free from academic dishonesty of any type, and grades in this course therefore should be and will be adversely affected by academic dishonesty. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty to the course instructor.

[The Belk College's Statement of Diversity]

The Belk College of Business strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

[Course Requirements]

Task	Points
[1] Exercises	300
[2] Team Project	500 (= Proposal Presentation 100 + Final Presentation & Report 400)
[3] Comprehensive Exam	200
Total	1000

* Submitting your assignment properly on time is important and your responsibility. Therefore, there will be a penalty of at least 20% point deduction for a late submission. The instructor will determine a specific penalty considering the nature of each late assignment.

[1] Exercises
There will be multiple exercises throughout the semester. The exercises will be a combination of in-class and at-home activities. These exercises will be given roughly once every two or three weeks. In each exercise, students are expected to solve specific innovation and marketing analytics problems relevant to corresponding topics. Solving these exercises will require students to learn about various types of analytics software programs such as SAS Text Miner, SAS Sentiment Analysis, and JMP.

[2] Team Project
The team project is a major requirement of this course. You need to make up a team who will jointly work on it. *Each team will be composed of 5 or 6 members.* The objective of this task is to have students apply some innovation and marketing concepts and innovative analytics techniques to the project. Your team wants to select a project of interest related to innovation and/or business problems. While a variety of projects are acceptable, I would encourage you to do the following. Develop a project plan to address a specific business problem (e.g., using social media to upgrade your business, using graphs to gain business insights) for a specific brand or organization. It is your responsibility to identify a suitable brand or organization and suitable innovation/business problems.

Importantly, you need to consider **data availability** for the project in selecting your research topic and determining research problems. One place to start with might be your employer. Other possibilities include finding publicly available data on the Internet (e.g., kaggle.com). Although this **secondary data approach** using existing data seems to be easy, it has a couple of major weaknesses. First, almost always, you will find that some key information you optimistically expect to have is missing. Second, data cleaning for your analysis to achieve your research objectives can be technically challenging and time-consuming. Alternatively, you can develop your own survey to collect data customized to your case. This **primary data approach** requires you to invest a significant amount of time for survey design. However, once you have a good-quality survey, you can benefit substantially from the customized data. Because text analytics is a primary component of this course as an essential part of Big Data, your analysis should include some text analytics. This also means that your project data should include some

text information to apply some text analytics. You can use web scraping techniques to collect such data available on the Internet or somewhere else. For example, to compare consumers' evaluations of various smartwatch brands, you can collect consumers' reviews and ratings on several major smart watch brands on the Internet using web scraping techniques.

There are three distinct stages in this team project.

- First, you will have an opportunity to find your team members and explore potential topics for your team project. You want to determine your topic well ahead of your proposal presentation.
- Second, your team needs to present a proposal to the entire class. Be prepared to deal with questions and criticisms from your classmates and instructor. The instructor's formal written feedback will be provided afterwards. What should be included in the proposal presentation will vary project to project. Generally, you want to determine what object (i.e., brand or organization) and topic (e.g., target market identification, social media campaign) you want to work on. You also need to describe your data and specify analysis models as much as possible. You should email an electronic file of your PowerPoint slides to the instructor. Your work will be graded based on content quality and presentation performance. All the members on the team should participate in the presentation in order to receive your team presentation points.
- Finally, your team will present the whole project work to the entire class. Be prepared to deal with questions and criticisms from your classmates, as in your earlier proposal presentation. Again, you should email an electronic file of your PowerPoint slides to the instructor. All the members on the team should participate in the presentation in order to receive your team presentation points. Based on the discussion on your project during this presentation, **your team should revise and complete a written final report.** The final report should include analysis results and an actionable business strategy arising from the empirical results.

* More details on each step will be provided as each step nears.
**** At the end of the semester, you will be asked to evaluate each of your members' contribution to the team project. You should be honest and impartial in your evaluations. (*Please, no free-riders!*)**

[3] Comprehensive Exam
There will be a challenging open-book in-class exam that covers all the materials discussed in this course. To prepare well for this crucial exam, you should consistently participate in class activities. This exam is more than the SAS exercises. In other words, you should note that just getting a good grade on the SAS exercises is not good enough to do well in this exam. Ultimately, this exam will test your abilities to analyze and interpret typical Big Data independently without any others' support.

[Grade Breakdown]

The final course grade will be determined by your total score based on all the class activities above. Your course grade will be assigned according to the following table. *Once the course grades are released, unfounded requests for better grades would be denied.*

A (90.0% – 100.0%); B (80.0% – 89.9%);
C (70.0% – 79.9%); D (60.0% – 69.9%); F (0.0% – 59.9%)

[Tentative Course Schedule]

* The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. In particular, because this semester is the third time I teach this course and intend to experiment with new materials, students should expect some major and minor changes to the schedule provided here.

Week (Thu)	Topic
Week 1 (1/12)	Course Overview JMP for Visual Analytics
Week 2 (1/19)	SAS Visual Analytics New Product Development: Conjoint Analysis
Week 3 (1/26)	Social Media Analytics: Text Clustering *Project Team Makeup*
Week 4 (2/2)	Social Media Analytics: Text Categorization
Week 5 (2/9)	Social Media Analytics: Text Categorization for Movie Reviews
Week 6 (2/16)	Social Media Analytics: Sentiment Analysis
Week 7 (2/23)	Social Media Analytics: Ontology Management + Multidimensional Scaling
Week 8 (3/2)	**Project Proposal Presentations**
	(3/6Mon – 3/11Sat) Spring Recess (No Classes)
Week 9 (3/16)	Exploratory Factor Analysis
Week 10 (3/23)	Partial Least Squares Regression
Week 11 (3/30)	Structural Equation Modeling
Week 12 (4/6)	*Project Data Analysis Meetings*
Week 13 (4/13)	Structural Equation Modeling
Week 14 (4/20)	**Pre-Final Project Presentations**
Week 15 (4/27)	**Exam**

** There will be some online class sessions during the semester because this course will be officially converted into a hybrid course in Spring 2018. A specific date for each online session will be announced ahead of time.*