Big Data Analytics for Competitive Advantage  
ITCS 6100-U91, DSBA 6100-U91  
Fall 2019

Instructor: Dr. Gabriel Terejanu  
Class Time: W 2:30PM-5:15PM
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Course Description: This course provides an introduction to the use of big data analytics as a strategic resource in creating competitive advantage for businesses. A focus is placed on integrating the knowledge of analytics tools with an understanding of how companies could leverage data analytics to gain strategic advantage. An emphasis is placed on developing the ability to think critically about complex problems/questions in real world data science and business analytics (DSBA) challenges. This course has a significant project-oriented component. Students will be divided in teams to analyze and provide insight on a real business dataset. Software tools such as Python and Orange3/KNIME will be introduced and will be used in completing the homework assignments and the data analysis of the group project.

Course Objectives: (1) Understand the role of big data analytics in organizational strategy and how organizations can leverage useful data/information to gain competitive advantage and acquire insights. (2) Gain an introductory knowledge of the data science and business analytics tools that are useful in extracting intelligence and value from data. (3) Apply big data analytics tools to analyze business opportunities and threats. (4) Use business cases/examples, develop data-driven strategies that enhance stakeholder relationships, open new market opportunities, and/or better position the organization for competitive advantage during industry transition. (5) Effectively communicate the findings from data analytics to a business audience.

Required Textbook

Some Recommended Books – additional reading material will be provided in the class

Lecture Notes/Assignments/Readings
Students will spend approximately 150 minutes of instructional time during the 15-week session using CANVAS or other web technologies, where lecture notes, homework assignments and additional material will be available on CANVAS. You will be responsible for downloading them to prepare for class and complete assignments.
**Attendance Policy**

Students are expected to attend all class meetings and to arrive before the class starts. Attendance will be taken at the beginning of each lecture. Class topics are integrated and hands-on activities are conducted in the majority of the classes. Failure to attend or to arrive on time can adversely affect both individual performance and the ability to contribute to the group project. *If a student misses 4 weeks of class or more, they will automatically receive an unsatisfactory U grade in the course regardless of earned points to date on other activities.* If a student misses a class due to work or other reasons, it is their responsibility to get notes from peers; the instructor does not hold extra repeat class sessions.

**Student Work and Grading**

1. (20%) Homework assignments (about 4 assignments)
2. (20%) Announced quizzes (about 4 quizzes)
3. (30%) Midterm exam
4. (20%) Group project presentations – peer evaluation
5. (10%) Attendance and participation based on peer feedback

**Grades**

A (90-100%), B (80-90%), C (70-80%), D (60-70%), F (0-60%)

**Tentative Schedule**

Week 01 (Aug 21): Introduction & Software.

(Aug 26): Last day to add, drop a course with no grade

Week 02 (Aug 28): Python Tutorial
Week 03 (Sep 04): Linear Regression; Overfitting; Regularization
Week 04 (Sep 11): Cross-Validation and Data-Scaling and Encoding
Week 05 (Sep 18): Guest Lecture – American Tire Distribution (ATD) @ Center City
Week 06 (Sep 25): Data Wrangling
Week 07 (Oct 02): Logistic Regression & Introduction to Probability
Week 08 (Oct 09): Expected Value Framework for Business Problem Formulation
Week 09 (Oct 16): Decision Trees & Visualizing Model Performance
Week 10 (Oct 23): Hypothesis Testing & Ensemble Models
Week 11 (Oct 30): MIDTERM EXAM
Week 12 (Nov 06): Working with Big Datasets and Beyond
Week 13 (Nov 13): Unsupervised Learning; Dimensionality Reduction; Clustering
Week 14 (Nov 20): Neural Networks and Automatic Machine Learning

(Nov 27): Thanksgiving Break - No Class
Week 15 (Dec 04): Group Project Presentations

**Team Policies and Expectations**

If a team member refuses to cooperate on the project, his/her name should not be included on the completed work. If the non-cooperation continues, the team should meet with the instructor so that the problem can be resolved, if possible. If no resolution is achieved, the cooperating team members may notify the uncooperative member in writing that he/she is in danger of being fired, sending a copy of the memo to the instructor. If there is no subsequent improvement, they should notify the individual in writing (copy to the instructor) that he/she is no longer with the team. The fired student should meet with his/her instructor to discuss options. Similarly, students who are consistently doing all the work for their team may issue a warning memo that they will quit unless they start getting cooperation, and a second memo quitting the team if the cooperation is not forthcoming. Students who get fired or quit...
must find a team willing to accept them as member. As you will find out, group work isn’t always easy – team members sometimes cannot prepare or attend group sessions because of other responsibilities, and conflicts often result from differing skill levels and work ethics. When teams work and communicate well the benefits more than compensate for the difficulties. One way to improve the chances that a team will work well is to agree beforehand on what everyone on the team expects from everyone else.

**Academic Integrity**

Homework assignments are expected to be the sole effort of the student(s) submitting the work. Students are expected to follow the Code of Student Academic Responsibility. Every instance of a suspected violation will be reported. Students found guilty of violations of the Code will receive the grade of F for the course in addition to whatever disciplinary sanctions are applied. **Your source code submission will be checked against plagiarism.**

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.

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 in Fretwell 230.