Tulane University

FREEMAN SCHOOL OF BUSINESS

MGSC 7510 Business Analytics Projects I
Fall 2018

Instructor: Professor Yinliang (Ricky) Tan

Office: GW 402F

Office Hours:
- Thursday – 2:30 PM - 3:30 PM

Class Meeting Day & Time:
- T and R – 09:30 AM -10:45 AM

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Tulane Canvas Site:
http://www2.tulane.edu/mytulane/

Class Location:
GWBC-180

Course Description:

This course is designed to deepen the student's ability to apply various business analytics skills and knowledge. In this course, you will analyze the data from various sources. Students will go through all typical steps of a data analytics project, including data understanding and cleanup, data analysis, and presentation of analytical results. You are expected to conduct three separate or coherent projects throughout this course (i.e., data visualization, unsupervised learning, and supervised learning).

This is a largely self-directed course, where my role as instructor is to provide guidance and suggestions to each team. There is no midterm or final exam for this course. However, there are milestones/progress reports and other assignments that must be completed satisfactorily to pass the course.

Course Goals

These team project will apply the concepts and tools introduced in class to "Real-World" problems. The objective is to encourage creative thinking when approaching unstructured problems, and critical thinking in your analysis and recommendations. You need to define the

problem and find the relevant data. This is followed by the analysis relying on the tools that we have covered during the course. Students in this course will learn to:

- Apply concepts and methods that span several topic areas to solve a challenging real-world data-centered problem in coordination with a project sponsor (industry, non-profit, government or academic partner) or your own data source.

- Work together in teams to systematically define and develop the project, as measured by progress on regular milestone assignments.

- Present their work to the sponsor and broader community via formal oral presentations/videos and written reports.

- Work and interact professionally with external project sponsors, faculty, and student peers.

Student Learning Objectives

Students successfully completing the course should be able to:

1. Develop critical thinking
2. Understand how to apply business analytics methods and techniques in addressing business problems
3. Conduct in-depth analysis of a strategic business problem
4. Communicate the results of an in-depth analysis to both a technical and management audience

Course Material

There is no required course materials for this course.

Grading

- **Course grades:** The course grades will be determined by assigning the following weights to the following course components (subject to change):

Grade component	Percentage weight
Peer Evaluation	10%
Project 1 (Data Visualization)	30%
Project 2 (Unsupervised Learning Methods)	30%
Project 3 (Supervised Learning Methods)	30%

For each project, there is one presentation (70%) and one project report (30%).

- **Final grades:** <u>The final grades will be curved subject to the Freeman School Graduate School grading policy</u>.

Team-based learning and Peer Evaluation

Team-based learning has been widely acknowledged for its effectiveness. Throughout this course, we will emphasize the role of team-based learning in project. Team will be assigned on a principle of "resource wealth distribution" during the first class period.

As the course emphasizes the team-based learning, we will have a lot of team activities. To ensure *every team member* *contribute the fair amount of time and effort* to the group, we will conduct the peer evaluations near the end of the course. Peer evaluation is going to affect your assignment, and project score. If you don't submit the peer evaluation before the due date, penalty will be enforced towards your grade. The peer evaluation result is strictly confidential, which is only shared between the individual student and the instructor. Please write your truthful and objective comments to your peers.

Team Projects

Teams should have no more than four members. <u>Each team must elect a team leader that will serve as a contact point for the group.</u> There will be milestones throughout the semester to evaluate your work progress.

Milestone 1: Data Visualization Project Proposal

Deadline: Aug 30, 2018 5pm

Project Proposal (no more than 2 pages) should include:

- List of team members
- Name of your team leader who will be the contact point for the team and be responsible for the timely submission of deliverables.
- Please list the dataset that you are going to work with, send me a proposal for the project including a description of the data, data source, number of variables, size of dataset, potential research questions.

Milestone 2: Data Visualization Analysis Report & Presentation

Deadline: Sep 19, 2018 5pm

Project Report (no more than 10 pages) should include:

- Executive Summary (no more than 1 page)
  - The executive summary should be no longer than one typewritten page, describing the conclusions of your data analysis to a non-technical audience. It should be intelligible to a person who does not know data mining or machine learning techniques. Suppose you are talking to your boss or to a friend who is not familiar with statistical terminology and data science methods. This can be seen as the executive summary/introduction of your report.
- Background Introduction
- Preliminary analysis
  - Are there any missing values? Decide what you will do with them.
  - Report the descriptive statistics of key variables that you will perform analysis on.
- Detailed analysis
  - You should include graphs and output tables, and you must provide the discussion after each of them. What are the insights that you generate from your visualization and analysis? This section is intended for an analytics literate/technical audience and must be written in a clear organized fashion.

Project Presentation (no longer than 15 minutes):

- Each team should prepare a presentation to describe the results of the analytics project. The presentation will be on Thursday September 20th (9:30am), and I am hoping that all students will be able to participate in person.

Milestone 3: Unsupervised Learning Project Proposal

Deadline: Oct 2, 2018 5pm

Unsupervised Learning Project Proposal (no more than 2 pages) should include:

- Please list the dataset that you are going to work with, send me a proposal for the project including a description of the data, data source, number of variables, size of dataset, research questions that you plan to tackle.
- Apply data exploration techniques (data visualization, descriptive statistics, etc...) to learn about the scope and quality of your data.

- Identify role of variables and start planning what technique to use to accomplish the analytics task.

Milestone 4: Unsupervised Learning Project status check

Deadline: Oct 24, 2018 5pm

In this milestone, each team should schedule a meeting with me by the deadline (email me at least 48 hours before our meeting). During the meeting, each team should prepare a deck of slides describes the steps of the analysis up to this point. The goal of this presentation is to describe the contributions toward the completion of the project, and to discuss the future plans to complete the analysis. We will also discuss issues and challenges encountered during the work.

Milestone 5: Unsupervised Learning Project Report and Presentation

Deadline: Oct 24, 2018 5pm

Project Report (no more than 6 pages) should include:
- Executive Summary
- Background Introduction
- Exploratory analysis of the data
- Methods (describing main research questions and analytics methods)
- Analysis of results
- Discussion and Conclusions

Project Presentation (no longer than 15 minutes):
- Each team should prepare a presentation to describe the results of the analytics project. The presentation will be on Thursday November 1st (9:30am) and I am hoping that all students will be able to participate in person.

Milestone 6: Supervised Learning Project Proposal

Deadline: Nov 8, 2018 5pm

Supervised Learning Project Proposal (no more than 2 pages) should include:

- Please list the dataset that you are going to work with, send me a proposal for the project including a description of the data, data source, number of variables, size of dataset, research questions that you plan to tackle.
- Apply data exploration techniques (data visualization, descriptive statistics, etc...) to learn about the scope and quality of your data.
- Identify role of variables and start planning what technique to use to accomplish the analytics task.

Milestone 7: Supervised Learning Project status check

Deadline: Oct 24, 2018 5pm

In this milestone, each team should schedule a meeting with me by the deadline (email me at least 48 hours before our meeting). During the meeting, each team should prepare a deck of slides describes the steps of the analysis up to this point. The goal of this presentation is to describe the contributions toward the completion of the project, and to discuss the future plans to complete the analysis. We will also discuss issues and challenges encountered during the work.

Milestone 8: Supervised Learning Project Report and Presentation

Deadline: Dec 4, 2018 5pm

Project Report (no more than 6 pages) should include:
- Executive Summary
- Background Introduction
- Exploratory analysis of the data methods)
- Analysis of results
- Discussion and Conclusions

Project Presentation (no longer than 15 minutes):
- Each team should prepare a presentation to describe the results of the analytics project. The presentation will be on Tuesday Dec 1st (9:30am) and I am hoping that all students will be able to participate in person.

Specific Course Policies

Appeals:

If you wish to appeal your grade on any grading, you have a week from the time it was returned to the class (not when you receive it). **After that week, I will consider all grades final.** Please realize that there are standard policies for point deductions for each problem with any exam or assignment, so unless the grader has misapprehended your intent or misread your work, any partial credit is unlikely to change.

Tentative Class Schedule (The class schedule is subject to change)

Week		Dates	Topic	Due Date
1	T R	21-Aug 23-Aug	Introduction on Data Visualization Dataset (Ben Horwitz, Director of Analytics New Orleans Police Department) TBD	
2	T R	28-Aug 30-Aug	Anu Varadharajan (Professor in Accounting) TBD	**Milestone 1**
3	T R	04-Sep 06-Sep	TBD Guest Lecture (Ben Montgomery, President of Premium Parking & Gino Picozzi, Lead Business Analyst of Premium Parking)	
4	T R	11-Sep 13-Sep	TBD TBD	
5	T R	18-Sep 20-Sep	TBD Group Presentation on Data Visualization (Ben Horwitz, Director of Analytics New Orleans Police Department)	**Milestone 2**
6	T R	25-Sep 27-Sep	TBD TBD	
7	T R	02-Oct 04-Oct	TBD TBD	**Milestone 3**
8	T R	09-Oct 11-Oct	**Fall Break** **Fall Break/ Wisdom Conference 2018**	
9	T R	16-Oct 18-Oct	TBD TBD	
10	T R	23-Oct 25-Oct	TBD TBD	**Milestone 4**
11	T R	30-Oct 01-Nov	TBD Unsupervised Learning Methods Project Presentation	**Milestone 5**
12	T R	06-Nov 08-Nov	TBD TBD	**Milestone 6**

13	T	13-Nov	TBD	
	R	15-Nov	TBD	
14	T	20-Nov	TBD	
	R	22-Nov	**Thanksgiving Holiday**	
15	T	27-Nov	TBD	
	R	29-Nov	TBD	**Milestone 7**
16	T	4-Dec	Supervised Learning Methods Project Presentation	**Milestone 8** **Peer Evaluation Due**

Statement about Academic Integrity
This class will be conducted in full accordance with Tulane's policies about academic integrity including, but not limited to, the Code of Academic Integrity and the Code of Student Conduct. These can be found at: http://college.tulane.edu/code.htm and http://tulane.edu/studentaffairs/conduct/rights/code-of-conduct.cfm.

Freeman Educational Norms and Expectations
This class will be conducted in full accordance with Freeman's Educational Norms and Expectations. Please reread the Norms and Expectations, which can be found at http://www.freeman.tulane.edu/students/bsm/pdf/Expected%20Behavioral%20Norms.pdf.

Student Accessibility:
If you believe you may encounter barriers to the academic environment due to your specific learning style or known challenges, please feel free to contact me and/or the Goldman Center for Student Accessibility. Any student with approved academic accommodations is encouraged to contact me during office hours or by emailing me to schedule an appointment. If you have questions regarding registering a disability or receiving accommodations, please contact the Goldman Center for Student Accessibility at 504-862-8433 or https://accessibility.tulane.edu.