Course Syllabus

Course Information

BUAN 6357-001 *Advanced Business Analytics Using R*
MIS 6357-001

Fall 2018 *Wednesday 4:00PM to 6:45PM* *JSoM 1.217*

Professor Contact Information

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Hours by Appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-requisite: OPRE 6301 or equivalent and BUAN 6356. Students are expected to bring writing materials and a personal laptop or tablet computer to class.

Course Description

This course covers theories and applications of business analytics. The focus is on extracting business intelligence from internal or external business data for various applications. Topics include data manipulation, imputation, variable selection, as well as advanced analytic methods, including (but not limited to) business data analytics, modeling, customer analytics, web intelligence analytics, business performance analytics, and decision-making analytics. The emphasis is placed on the 'know-how' -- knowing how to extract and apply business analytics to improve business decision-making. Students will also acquire hands-on experience with business analytics software, specifically R.

Student Learning Objectives/Outcomes

1. To gain a general understanding of Business Intelligence / Data Mining and to appreciate the data rich environment of today's global economy
2. To gain a practical understanding of key methods integral to Data Mining
3. To gain an understanding of when to use which technique
4. To gain an understanding of how to interpret results from the use of a technique
5. To become aware of some current trends in the use of Business Intelligence
6. To gain the intellectual capital required for Business Analytics services
7. To experience one or more popular open source software choices (emphasis on R)

Required Textbooks and Materials

All course materials (handouts, example spreadsheets, etc.) are provided electronically (through eLearning or UTD Box).

Suggested Course Materials

Readings list provided through UTD Box.

Primary Topics

1)	**R Programming**	**Packages, user-defined functions, sub-group processing**
2)	**Simulation**	**Monte Carlo methods, Synthetic Data generation**
3)	**Compute Intensive**	**Bootstrap, Boosting, Bagging, Random Forest**
4)	**Modeling**	**Bayes Networks, Social Network Analysis**
5)	**Prediction**	**OLS, GLM, Generalized LM, Recursive Partitioning (Trees)**
6)	**Classification**	**Generalized LM, Recursive Partitioning**
7)	**Clustering**	**Supervised v. Unsupervised; K-means, h-clust, PCA**

Secondary Topics (time permitting)

1) Association (Market Basket)
2) MARS (adaptive splines)
3) GMDH
4) Mahalanobis distance Classification
5) Text Processing

Assignments & Academic Calendar

(Topics, Reading Assignments, Due Dates, Exam Dates)

Homework assignments will be made available through eLearning and UTD Box. All homework assignments will be submitted through eLearning. There will be 3 exams: 8 and 9 March 2019, 26 and 27 April 2019, and 3 and 4 May 2019. Exams will be administered at the UTD Testing Center and students must reserve time slots for each exam between 1:00PM on the appropriate Friday and 11:30AM on the appropriate Saturday. These reservations must be made at least 3 days prior to the exam. Student ID cards ("Comet card") are required as identification.

Students are encouraged to identify obtainable data of interest to them and to propose analysis projects for the identified data. These will not be included in the assigned grades.

Grading Policy

Assigned homework: 20%, exams: 80%. The lowest exam grade will be dropped. All grades and grade components will be available through eLearning.

Grades cutoffs will be:

A	B+	B	C+	C	F
90	85	80	75	70	<70

Course & Instructor Policies

Class attendance is assumed. Students are responsible for all material assigned or discussed in class. Students are expected to access and review the online materials and to be prepared to discuss the materials in class.

All persons in the class are expected to behave in a civil and respectful manner.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.