

## ***MIS6356.002/BUAN 6356.002 Syllabus Fall 2016***

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### **Course Information**

<b>Course:</b>	MIS 6356/BUAN 6356
<b>Course Name:</b>	Business Analytics with R
<b>Location:</b>	JSOM 12.210
<b>Time:</b>	Wednesday 4:00 PM – 6:45 PM
<b>Website:</b>	<a href="https://elearning.utdallas.edu/">https://elearning.utdallas.edu/</a>

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### **Professor Contact Information**

<b>Instructor:</b>	Russell R. Torres, Ph.D.
<b>Office:</b>	3.807
<b>Phone:</b>	972-883-5097
<b>Email:</b>	<a href="mailto:russell.torres@utdallas.edu">russell.torres@utdallas.edu</a>
<b>Office Hours:</b>	Tuesday 4:00 PM – 5:00 PM Wednesday 1:00 PM – 4:00 PM Or by Appointment
<b>TA:</b>	Pallavi Vijay
<b>TA Email:</b>	<a href="mailto:pxv150530@utdallas.edu">pxv150530@utdallas.edu</a>

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

There are no pre-requisites for this class. Some knowledge of basic statistics and probability will be helpful.

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### **Course Description**

This course covers theories and applications of business analytics. The focus is on extracting business intelligence from firms' business data for various applications, including (but not limited to) customer segmentation, customer relationship management (CRM), personalization, online recommendation systems, web mining, and product assortment. 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 in the form of R.

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## Student Learning Objectives/Outcomes

The objectives of this course are:

1. To learn business analytics concepts, methods and techniques.
2. To have working knowledge on using business analytics tools to solve data-driven business problems.

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## Required Textbooks and Materials

<b>Textbooks:</b>	None
<b>Software:</b>	R and Rattle - <a href="http://rattle.togaware.com/">http://rattle.togaware.com/</a>
<b>Laptop Computer:</b>	This course is heavily hands-on with many in-class exercises. Students are required to install the software on their laptops promptly after first class, and to bring laptops to each class thereafter (except for exam days).
<b>Calculator</b>	A simple calculator will be required for exams. It should be capable of exponentiation and taking square roots. No programmable or graphing calculators are permitted.

## Suggested Course Materials

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|------------------------|---|
| <b>Optional Books:</b> | 1. Data Mining with Rattle and R: The Art of Excavating Data for Knowledge Discovery, by Graham Williams. Springer, ISBN-13: 978-1-4419-9889-7. |
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## Assignments & Academic Calendar

Week	Day	Topic	Notes
1	8/24	Course Introduction Regression Review	Form Groups Get R and Rattle
2	8/31	Dimension Reduction and Principal Components Analysis	
3	9/7	Association Rule Mining	
4	9/14	Introduction to R and Rattle Association Rule Mining in Rattle	
5	9/21	Clustering	Homework 1 Due Project Proposal Due
6	9/28	Hierarchical Clustering Clustering in Rattle	
7	10/5	Exam 1	
8	10/12	Classification I: Fundamentals of Decision Trees	Homework 2 Due Project Progress Report Due
9	10/19	Classification II: Logistic Regression	Homework 3 Due
10	10/26	Classification in Rattle	
11	11/2	Evaluating Classifiers	
12	11/9	Recommendation Systems and Collaborative Filtering	
13	11/16	Web and Text Mining	Final Project Report Due
14	11/23	FALL BREAK – NO CLASS	
15	11/30	Project Presentations	
16	12/7	Project Presentations	
17	12/14	Exam 2	5:00 PM to 7:00 PM

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## Grading Policy

Grades will be based on student performance relative to other students who have completed this course in the past as well as the students who are currently taking the course. Adherence to instructions will be considered an important part of the grade.

### Assessment:

Deliverable	Percent of Score
Assignments*	15%
Exam 1	30%
Exam 2	30%
Group Project**	25%

\* This class involves several group assignments and one group project. Your instructor will tell you how many groups members should be included. Groups should be formed ASAP. Once

formed, altering the groups will not be possible except under very special circumstances.

\*\*See a separate handout on first class day about group project.

**Approximate Grading Scale\*\*\*:**

Scaled Score	Letter Grade
94 – 100	A
86 – 93	A-
81 – 85	B+
76 – 80	B
71 – 75	B-
66 – 70	C+
60 – 65	C
Less than 60	F

\*\*\* Final cut offs may be adjusted at the end of the semester based on the degree of difficulty of the material graded.

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## **Course & Instructor Policies**

### **Announcements**

You are responsible for any announcements made in class or through eLearning, including changes to the schedule or syllabus. You are also responsible for material distributed in class or through eLearning (so check eLearning regularly).

### **Submission of Assignments**

All assignments and project reports must be submitted through eLearning. Alternative submission methods, e.g., by paper, by e-mail or on disk/USB drive, is not acceptable unless prior permission of instructor is obtained. Submissions after the deadline will not be accepted, and accordingly a grade of zero will be automatically applied for a missing submission after the deadline.

### **Exams**

All exams are closed-book, closed-notes and require individual-effort. Unless under extreme circumstances, make-up exams will not be arranged. A make-up exam will include significant discussion, essay, and short answer questions.

### **Participation**

Grade allocation for group projects and assignments will be determined, in part, by peer evaluation. In extreme cases, such as when a student contributes significantly less to group assignments or projects throughout the semester, *a severe penalty will be imposed in the form of directly deducting assignment and/or project points.*

### **Make Up Exams**

Make up exams will be rare. You must have an excused absence on the day of the exam and a make up exam will be allowed ONLY with the prior permission of the instructor.

## **Other Important Information**

### **Academic Integrity**

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrates a high standard of individual honor in his or her scholastic work.

**Academic Dishonesty:** Academic dishonesty can occur in relation to any type of work submitted for academic credit or as a requirement for a class. It can include individual work or a group project. Academic dishonesty includes plagiarism, cheating, fabrication, and collaboration/collusion. In order to avoid academic dishonesty, it is important for students to fully understand the expectations of their professors. This is best accomplished through asking clarifying questions if an individual does not completely understand the requirements of an assignment.

Additional information related to academic dishonesty and tips on how to avoid dishonesty may be found here: <https://www.utdallas.edu/conduct/dishonesty/>.

### **Copyright Notice**

It is the policy of the University of Texas at Dallas to adhere to the requirements of the United States Copyright Law of 1976, as amended, (Title 17, United States Code), including ensuring that the restrictions that apply to the reproduction of software are adhered to and that the bounds of copying permissible under the fair use doctrine are not exceeded. Copying, displaying, reproducing, or distributing copyrighted material may infringe upon the copyright owner's rights. Unauthorized distribution of copyrighted material, including unauthorized peer-to-peer file sharing, may subject students to appropriate disciplinary action as well as civil and criminal penalties. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. For more information about the fair use exemption, see <http://copyright.lib.utexas.edu/copypol2.html>. As a UT Dallas student, you are required to follow UT Dallas' copyright policy (UTDPP1043 at <http://policy.utdallas.edu/utdpp1043>) and the UT System's policy, UTS107 at <http://www.utsystem.edu/board-of-regents/policy-library/policies/uts107-use-copyrighted-materials>.

### **Email Use**

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. All official student email correspondence will be sent only to a student's UT Dallas email address and UT Dallas will only consider email requests originating from an official UT Dallas student email account. This allows the University to maintain a high degree of confidence in the identity of each individual's corresponding via email and the security of the transmitted information. The University of Texas at Dallas furnishes each student with a free email account that is to be used in all communication with university personnel. The Office of Information Technology provides a method for students to have their UT Dallas mail forwarded to other email accounts. To activate a student UT Dallas computer account and forward email to another account, go to <http://netid.utdallas.edu>.

**Class Attendance**

Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. Absences may lower a student's grade where class attendance and class participation are deemed essential by the instructor. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

**Withdrawal from Class**

The administration at UT Dallas has established deadlines for withdrawal from any course. These dates and times are published in the Comet Calendar (<http://www.utdallas.edu/calendar>) and in the Academic Calendar (<http://www.utdallas.edu/academiccalendar>). It is the student's responsibility to handle withdrawal requirements from any class. In other words, a professor or other instructor cannot drop or withdraw any student unless there is an administrative drop such as the following:

- Have not met the prerequisites for a specific course
- Have not satisfied the academic probationary requirements resulting in suspension
- Office of Community Standards and Conduct request
- Have not made appropriate tuition and fee payments
- Enrollment is in violation of academic policy
- Was not admitted for the term in which they registered

It is the student's responsibility to complete and submit the appropriate forms to the Registrar's Office and ensure that he or she will not receive a final grade of "F" in a course if he or she chooses not to attend the class after being enrolled.

**Student Grievance Procedures**

Procedures for student grievances are found in university policy UTDSP5005 (<http://policy.utdallas.edu/utdsp5005>). In attempting to resolve any student grievance regarding disputes over grades, application of degree plan, graduation/degree program requirements, and thesis/and dissertation committee, adviser actions and/or decisions, evaluations, and/or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originated.

**Incomplete Grade Policy**

As per university policy, incomplete grades may be given, at the discretion of the instructor of record for a course, when a student has completed at least 70% of the required course material but cannot complete all requirements by the end of the semester. An incomplete course grade (grade of 'I') must be completed within the time period specified by the instructor, not to exceed eight (8) weeks from the first day of the subsequent long semester. Upon completion of the required work, the symbol 'I' may be converted into a letter grade (A through F). If the grade of Incomplete is not removed by the end of the specified period, it will automatically be changed to F.

**AccessAbility Services**

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to

receive an accommodation and would like to request it for this course, please discuss it with your professor and allow one week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact OSA for a confidential discussion. OSA is located in the Student Services Building, SSB 3.200. They can be reached by phone at 972-883-2098, or by email at [studentaccess@utdallas.edu](mailto:studentaccess@utdallas.edu).

### **Religious Holy Days**

The University of Texas at Dallas will excuse a student from class or other required activities, including examinations and travel time for the observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, of the Texas Tax Code.

Students are encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment.

Excused students will be allowed to take missed exams or complete assignments within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the President of UT Dallas or from the President's designee. The chief executive officer or designee must take into account the legislative intent of Texas Education Code 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

### **Resources to Help You Succeed**

The Office of Student Success operates the Student Success Center (SSC, <http://www.utdallas.edu/studentssuccess>), which offers assistance to students in the areas of writing, mathematics, communication, multiple science fields, reading, study skills, and other academic disciplines. These services are available through individual and small group appointments, workshops, short courses, and a variety of online and instructional technologies. All students enrolled at UT Dallas are eligible for these services.

The **Math Lab** gives short-term and semester long support for a variety of introductory and advanced mathematics courses. Students may drop in to visit with a math tutor on a regular basis. Comet card is required.

The **Writing Center** offers a collaborative learning environment for one-to-one and small group assistance with general and advanced writing assignments and overall writing skills. Scheduling an appointment is strongly recommended, but walk in appointments are possible if a tutor is available.

The **Peer Tutoring** program offers free tutoring assistance in multiple locations for many of the historically challenging undergraduate subjects at UT Dallas. Tutoring sessions, offered every weekday on a drop-in basis, are one-on-one or in a small group format. The sessions

are designed to meet students' individual questions and needs related to course/subject concepts. All peer tutors are current UT Dallas students who made an A- or better in the course and have a strong faculty/staff recommendation. Students should check the Student Success Center website each semester for subject offerings and session times.

The **Peer-Led Team Learning (PLTL)** program provides an active, engaged learning experience for students who meet in small groups once a week with a Peer Leader who helps guide them through a potentially difficult gateway course. Students that attend sessions regularly typically earn a half to a whole letter grade higher than students that do not participate in the PLTL program.

**Supplemental Instruction (SI)** provides free, peer-facilitated weekly study sessions for students taking historically difficult courses. SI sessions encourage active, collaborative learning based on critical thinking and transferable study skills. SI leaders attend lectures, take notes, and read assigned material just like the enrolled students. Students should check the SSC website for subject and session times.

The **Communication Lab (CommLab)** offers one-on-one and group consultations where you will gain practical feedback for improving oral and group presentations.

**Success Coaches** are available for individual student appointments to discuss study skills, time management, note taking, test taking and preparation, and other success strategies.

The Student Success Center's main office is located in the McDermott Library Building and can be contacted by calling 972-883-6707 or by sending an email to [ssc@utdallas.edu](mailto:ssc@utdallas.edu).

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### **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.”

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### **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. If in conflict, University syllabus policies supersede those contained in this 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.***