SCHOOL OF MANAGEMENT
THE UNIVERSITY OF TEXAS AT DALLAS

UTD

Fall 2015 Syllabus

BUAN/MIS 6324: Business Intelligence Software and Techniques

Instructor: Dr. Radha Mookerjee, (SOM 3.209, 972-883-2415, email via eLearning ONLY)

Class hours: 4:00 to 6:45 pm, Wednesdays

Office Hours: 4:00 pm to 5:30 pm on Tuesdays or by appointment

Email: via eLearning only

TA for the course: TBA

TA email: via eLearning

TA office hours and location: TBA

Optional Books:

1) Data Mining for Business Intelligence: Concepts, techniques, and applications in Microsoft Office Excel with XLMiner, 2e, by Galit Shmueli, Nitin Patel and Peter Bruce. Wiley, ISBN-10: 0470526823, ISBN-13: 978-0470526828. *(available as an eBook from the UTD library)*

2) Data Mining Techniques: For Marketing, Sales, and Customer Relationship Management, 3e, by Gordon Linoff and Michael Berry. Wiley, ISBN-10: 0470650931, ISBN-13: 978-0470650936 *(available as an eBook from the UTD library)*

3) Getting Started with Business Analytics: Insightful Decision-Making, by David Roi Hardoon and Galit Shmueli. CRC Press, ISBN-10: 1439896534, ISBN-13: 978-1439896532

4) Applied Analytics Using SAS Enterprise Miner (Course Notes), by Peter Christie, Jim George, Jeff Thompson and Chip Wells. SAS e-book. **To be distributed in eLearning.**

Additional Reading: Lecture notes and additional learning material will be posted in eLearning as the semester proceeds.

Required Software: SAS 9.4 (Wait until first class on how to acquire it.)

Laptop Computer: This course is heavily hands-on with many in-class exercises. Students are required to purchase and install SAS on their laptops promptly after first class, and to bring laptops to each class thereafter (except for exam days).

Course Description: Most organizations are data rich and information poor. For instance, by 2012 Facebook was adding 500 TB of new data daily. The rate at which data has been accumulating

has drastically increased with newer sources like social networks and RFID. These large volumes of data potentially could reveal useful information about the target of interest, such as customers and products. The primary objective of this course is to introduce you to various techniques available to extract useful information (business intelligence) from the large volumes of data an organization might possess. At the end of the semester, you will not only appreciate the substantial opportunities that exist in the BI realm, but also learn techniques that will allow you to exploit these opportunities. The course will cover general concepts in the BI field, along with popular BI techniques including association rules, clustering and classification. The focus will be on how the techniques are to be used, and the details of the methodologies will be covered only to the extent necessary to understand when and how each technique can be used. Students will also gain experience with some leading BI software over the course of the semester.

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

Course Objective: The objective of the course is to:

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 become aware of some current trends in the use of BI.

5. To gain the intellectual capital required for business analytics services.

Groups: This class involves several group assignments and one group project. Groups should comprise 4-5 students, and should be formed ASAP. Once formed, altering the groups will not be possible except under very special circumstances.

Group Project: See a separate handout on first class day about group project.

Course Evaluation:
1. *Group Assignments* 15%

2. *Test 1* (35%): Test on October 14th 2015

3. *Test 2* (35%): Test on December 9th 2015

4. Group Project (15%)

Notes:

1.   You must submit original, independent intellectual work for all academic
     exercises.

2.   Make up exams: will be allowed ONLY with the prior permission of the
     instructor.

3.   Exams are closed book, closed notes

4.   Grade allocation for group projects and assignments will be determined in
     part by peer evaluation

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

6.   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. Late submissions will not be accepted.

Grading Information

Approximate Grading Scale

Scaled Score	Letter Equivalent
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

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.

Tentative Class Schedule:

Week	Day(s)	Topic
1	08/26/2015	Course Introduction **(Form groups, get SAS)**
2	09/02/2015	Data Preprocessing and Principal Component Analysis
	09/09/2015	**No Class**
3	09/16/2015	Association Rule Mining
4	09/23/2015	Introduction to SAS Enterprise Miner; Association Rule Mining in Enterprise Miner;
	09/27/2015	**Homework One Due**
5	09/30/2015	Clustering
	10/04/2015	**Project Proposal due**
6	10/07/2015	Hierarchical Clustering; Clustering in Enterprise Miner
	10/11/2015	**Homework Two Due**
7	10/14/2015	*Test 1*
8	10/21/2015	Classification I: Fundamentals and Decision Trees
	10/25/2015	**Project progress report due**
9	10/28/2015	Classification II: Logistic Regression
10	11/04/2015	Classification in Enterprise Miner
	11/08/2015	**Homework Three Due**
11	11/11/2015	Evaluating Classifiers; Recommendation Systems and Collaborative Filtering
	11/17/2015	**Project final report due**
12	11/18/2015	Project Presentations
13	**12/02/2015**	Project Presentations and Review
14	*12/09/2015*	*Test 2*

Class Attendance:

No points are awarded for attendance. However, students are expected to attend all classes and to read the assigned material. It is also the students' responsibility to keep abreast of any announcements made in class. I will post information about significant changes, if any, to the syllabus. This is only to be used as a supplement, and not as a substitute, to announcements made in class. I will monitor attendance in class and will provide no additional help to students who regularly skip lectures. Students are expected to come to class on time and stay for the entire class duration. Please do not distract me or the other students by walking in and out of class while the lecture is going on.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations* of the Board of Regents of the University of Texas System, *Part 1, Chapter VI, Section 3*, and in Title V, *Rules on Student Services and Activities of the Course Syllabus Page 8, University's Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SSB 4.400, 972/883- 6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty and administration of the School of Management expect from our 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 demonstrate a high standard of individual honor in his or her scholastic work. We want to establish a reputation for the honorable behavior of our graduates, which extends throughout their careers. Both your individual reputation and the school's reputation matter to your success.

The Judicial Affairs website lists examples of academic dishonesty. Dishonesty includes, but is not limited to cheating, plagiarism, collusion, facilitating academic dishonesty, fabrication, failure to contribute to a collaborative project and sabotage. Some of the ways students may engage in academic dishonesty are:

- Coughing and/or using visual or auditory signals in a test;

- Concealing notes on hands, caps, shoes, in pockets or the back of beverage bottle labels;
- Writing in blue books prior to an examination;
- Writing information on blackboards, desks, or keeping notes on the floor;
- Obtaining copies of an exam in advance;
- Passing information from an earlier class to a later class;
- Leaving information in the bathroom;
- Exchanging exams so that neighbors have identical test forms;
- Having a substitute take a test and providing falsified identification for the substitute;
- Fabricating data for lab assignments;
- Changing a graded paper and requesting that it be regraded;
- Failing to turn in a test or assignment and later suggesting the faculty member lost the item;
- Stealing another student's graded test and affixing one's own name on it;
- Recording two answers, one on the test form, one on the answer sheet;
- Marking an answer sheet to enable another to see the answer;
- Encircling two adjacent answers and claiming to have had the correct answer;
- Stealing an exam for someone in another section or for placement in a test file;
- Using an electronic device to store test information, or to send or receive answers for a test;
- Destroying or removing library materials to gain an academic advantage;
- Consulting assignment solutions posted on websites of previous course offerings;
- Transferring a computer file from one person's account to another;
- Transmitting posted answers for an exam to a student in a testing area via electronic device;
- Downloading text from the Internet or other sources without proper attribution;
- Citing to false references or findings in research or other academic exercises;
- Unauthorized collaborating with another person in preparing academic exercises.
- Submitting a substantial portion of the same academic work more than once without written authorization from the instructor.
  http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-Basicexamples.html

During tests and quizzes, students in this section are not allowed to have with them any food or drinks, scratch paper, course materials, textbooks, notes, invisible ink pens, or electronic devices, including IPads, IPhones, IPods, MP3 Players, earphones, radios, smart phones, cameras, calculators, multi-function timepieces, or computers. When possible, students should sit in alternating seats, face forward at all times, and remove any clothing which might conceal eye movements, reflect images of another's work, or hide course material for copying. Exam proctors will monitor any communication or signaling between students by talking, whispering, or making sounds, or by using your hands, feet, other body movements, the test paper itself or your

writing implement. Students will not be allowed to leave the classroom without submitting the exam.

Students in this course suspected of academic dishonesty are subject to disciplinary proceedings, and if found responsible, the following minimum sanctions will be applied:

1. **Tests – F for the course**
2. **Homework – Zero for the Assignment**

These sanctions will be administered only after a student has been found officially responsible for academic dishonesty, either through waiving their right for a disciplinary hearing, or being declared responsible after a hearing administered by Judicial Affairs and the Dean of Student's Office .

In the event that the student receives a failing grade for the course for academic dishonesty, the student is not allowed to withdraw as a way of preventing the grade from being entered on their record. Where a student receives an F in a course and chooses to take the course over to improve their grade, the original grade of F remains on their transcript, but does not count towards calculation of their GPA.

The School of Management also reserves the right to review a student's disciplinary record, on file with the Dean of Students, as one of the criteria for determining a student's eligibility for a scholarship.

Judicial Affairs Procedures

Under authority delegated by the Dean of Students, a faculty member who has reason to suspect that a student has engaged in academic dishonesty may conduct a conference with the student in compliance with the following procedures:

(i) the student will be informed that he/she is believed to have committed an act or acts of academic dishonesty in violation of University rules;
(ii) the student will be presented with any information in the knowledge or possession of the instructor which tends to support the allegation(s) of academic dishonesty;
(iii) the student will be given an opportunity to present information on his/her behalf;
(iv) after meeting with the student, the faculty member may choose not to refer the allegation if he/she determines that the allegations are not supported by the evidence; or
(v) after meeting with the student, the faculty member may refer the allegations to the dean of students along with a referral form and all supporting documentation of the alleged violation. Under separate cover, the faculty member should forward the appropriate grade to be assessed if a student is found to be responsible for academic dishonesty;
(vi) the faculty member may consult with the dean of students in determining the recommended grade;
(vii) the faculty member must not impose any independent sanctions upon the student in lieu of a referral to Judicial Affairs;
(viii) the faculty member may not impose a sanction of suspension or expulsion, but may make this *recommendation* in the referral documentation

If the faculty member chooses not to meet with the student and instead forwards the appropriate documentation directly to the dean of students, they should attempt to inform the student of the allegation and notify the student that the information has been forwarded to the Office of Dean of Students for investigation.

The student, pending a hearing, remains responsible for all academic exercises and syllabus requirements. The student may remain in class if the student's presence in the class does not interfere with the professor's ability to teach the class or the ability of other class members to learn. (See Section 49.07, page V-49-4 for information regarding the removal of a student from class).

Upon receipt of the referral form, class syllabus, and the supporting material/documentation from the faculty member, the dean shall proceed under the guidelines in the _Handbook of Operating Procedures_, Chapter 49, Subchapter C. If the respondent disputes the facts upon which the allegations are based, a fair and impartial disciplinary committee comprised of UTD faculty and students, shall hold a hearing and determine the responsibility of the student. If they find the student in violation of the code of conduct, the dean will then affirm the minimum sanction as provided in the syllabus, and share this information with the student. The dean will review the student's prior disciplinary record and assess additional sanctions where appropriate to the circumstances. The dean will inform the student and the faculty member of their decision.