Online Course Syllabus

Course Information

Course Number/Section	MIS 6334. 0W1/BUAN 6334.0W1
Course Title	Business Intelligence Software and Techniques
Term	Fall 2016 (Aug 22 – Dec 22)

Professor Contact Information

Professor	Syam Menon
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About the Instructor

Syam Menon has taught information systems and operations courses for over 15 years. He received his MBA and PhD from the University of Chicago, and has been at UTD since 2002. His research and teaching interests revolve around optimization, data mining and privacy.

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

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

Course Description

Most organizations are data rich and information poor. For instance, Walmart captured 20 million transactions per day as early as 2003. The rate at which data has been accumulating has only increased since, with newer sources like social networks and RFID. These large volumes of data potentially could reveal useful information about the target of interest – customers, in most business contexts. 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 business intelligence 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 many popular BI techniques like association rules, decision trees, neural networks, classification and clustering. 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 using BI software, in the form of SAS Enterprise Miner.

Student Learning Objectives/Outcomes

- To gain a general understanding of business intelligence/data mining, and to appreciate the data rich environment of today's global economy.
- To gain a practical understanding of many key methods integral to data mining.
- To gain an understanding of when to use which technique.
- To become aware of some current trends in the use of BI.
- To gain the intellectual capital required to provide business analytics services.

Required Textbooks and Materials
Required Texts

- Data Mining for Business Intelligence, 2nd Edition, by Shmueli, Patel and Bruce. Wiley, ISBN-10: 0470526823, ISBN-13: 978-0470526828 **(available as an eBook from the UTD library)**

Required Software

- **SAS 9.4**. There will be many exercises using SAS Enterprise Miner in this class. Students are required to purchase and install SAS 9.4 on their computers. It can be purchased from UT Austin's online shop. Instructions on how to purchase and install SAS are provided as separate handouts. **The approval process for the academic license takes time, so do this ASAP**.

Suggested Course Materials
Suggested Readings/Texts

- Data Mining Techniques, 3rd Edition, by Linoff and Berry. Wiley, ISBN-10: 0470650931, ISBN-13: 978-0470650936 **(available as an eBook from the library)**

Textbooks and some other bookstore materials can be ordered online through Off-Campus Books http://www.offcampusbooks.com or the UT Dallas Bookstore http://www.bkstr.com/texasatdallasstore/home. They are also available in stock at both bookstores.

Technical Requirements
In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements http://www.utdallas.edu/elearning/students/getting-started.html#techreqs on the Getting Started with eLearning webpage http://www.utdallas.edu/elearning/students/getting-started.html.

Course Access and Navigation
The course can be accessed using the UT Dallas NetID account at: https://elearning.utdallas.edu. Please see the course access and navigation http://www.utdallas.edu/elearning/students/getting-started.html#courseaccessandnav section of the site for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials http://www.utdallas.edu/elearning/students/eLearningTutorialsStudents.html.
UT Dallas provides eLearning technical support 24 hours a day/7 days a week. The eLearning Support Center http://www.utdallas.edu/elearninghelp services include a toll free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication
This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the eLearning Tutorials webpage http://www.utdallas.edu/elearning/students/eLearningTutorialsStudents.html for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources
Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the eLearning Current Students page http://www.utdallas.edu/elearning/students/cstudents.htm for details.

Server Unavailability or Other Technical Difficulties
The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk http://www.utdallas.edu/elearninghelp. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Assignments & Academic Calendar

DATES	TOPIC/LECTURE	READING	ASSIGNMENTS
22Aug2016 – 28Aug2016	Course Access; Self-Orientation		1. Purchase & install SAS (See instructions) 2. Form groups by 05Sep2016 3. Get the Text Book (eBook available from the library) 4. Go over the syllabus in detail
MODULE I : INTRODUCTION AND DIMENSIONALITY REDUCTION			
29Aug2016 – 04Sep2016	Introduction; Introduction to SAS Enterprise Miner (EM)	Lecture 01 PPT SAS EM Lectures Chapters 1 & 2	
05Sep2016 – 11Sep2016	Dimensionality Reduction and PCA; PCA in SAS EM	Lecture 02 PPT SAS EM Lectures Chapter 4	

MODULE II : UNSUPERVISED MODELS: ASSOCIATION RULE MINING AND CLUSTERING			
12Sep2016 – 18Sep2016	Association Rule Mining; Association Rule Mining and SAS EM	Lecture 03 PPT SAS EM Lectures Chapter 13	**12Sep2016:** **HW 1 assigned**
19Sep2016 – 25Sep2016	Introduction to Clustering	Lecture 04 PPT Chapter 14	**19Sep2016:** **HW 1 Due** **Projects 1 & 2 assigned**
26Sep2016 – 02Oct2016	Hierarchical Clustering; Clustering in SAS EM	Lecture 05 PPT SAS EM Lectures Chapter 14	**26Sep2016:** **HW 2 assigned** **Term Paper Proposal due**
MODULE III : SUPERVISED MODELS: CLASSIFICATION METHODS AND EVALUATION			
03Oct2016 – 09Oct2016	Classification: Fundamentals & Decision Trees	Lecture 06 PPT Chapter 9	**03Oct2016:** **HW 2 due**
10Oct2016 – 13Oct2016 : ONLINE EXAMINATION			
17Oct2016 – 23Oct2016	Classification: Logistic Regression	Lecture 07 PPT Chapter 10	
24Oct2016 – 30Oct2016	Evaluating Classifiers	Lecture 08 PPT Chapter 5	**24Oct2016:** **Project 1 due**
31Oct2016 – 06Nov2016	Classifiers and SAS EM	SAS EM Lectures	**31Oct2016:** **HW 3 assigned** **Term Paper Halfway Report Due**
MODULE IV : RECOMMENDER SYSTEMS			
07Nov2016 – 13Nov2016	Recommender Systems	Lecture 09 PPT	**07Nov2016:** **HW 3 due**
MODULE V : TEXT MINING			
14Nov2016 – 20Nov2016	Text Mining	Lecture 10 PPT	**14Nov2016:** **Project 2 due**
22Nov2016 : FALL BREAK: UNIVERSITY CLOSED			
28Nov2016 – 29Nov2016	Free for 1) Self-Review 2) Term Paper Completion		

02Dec2016 (Friday)			**02Dec2016:** **Term Paper due** **Peer Evaluation Due**
EXAMINATION			
30Nov2016 – 05Dec2016	**Proctored Exams via UTD Testing Center or Approved Testing Service** **All completed exams must be received by 12:00 NOON CT on 05Dec2016**		

Proctored Final Exam Procedures
This course requires a proctored final examination, worth 250 points (25% of the final grade). It will comprise a mix of true-false, multiple choice and problem-solving/descriptive questions. You are allowed only a writing instrument when taking this exam – **no scantrons or calculators are needed, or allowed**. You will have **two hours** to take the test.

Your course has a proctored exam requirement, please see the Student Success Center Proctored Exam website http://www.utdallas.edu/studentsuccess/testingcenter/proctored_exams/index.html to make arrangements.

The exam must be taken during this testing window: **November 30, 2016 – December 05, 2016.** Please see the **UTD Student Success Center Website** for more information. In particular, please see the **Student Success Center Proctored Exam website** to make arrangements.

Local students can take their exams on-campus at the **UTD Student Success Center**. Students who find UTD geographically inconvenient may use a testing service of their choice at a convenient location to have the exam proctored. Please go to the **Proctored Exam Information** page to find detailed information on arranging a proctored exam. Please note students are responsible for any fee charge of their testing services. All completed exams must be received by **12:00 NOON Central Time on December 05, 2016** to allow timely grade reporting to the UTD Registrar.

If any student needs special accommodations, please seek the instructor's approval in advance. If you have any questions about using either UTD or outside testing center service, please contact the UTD Student Success Center (972-883-6707; TestingCenter@utdallas.edu).

Grading Policy

Weights

Homework 1	50	5 %
Homework 2	50	5 %
Homework 3	50	5 %
Exam 1 (online)	250	25 %
Exam 2	250	25 %
Project 1	50	5 %
Project 2	100	10 %
Term Paper	150	15 %

Class Participation/Contribution	25	2.5 %
Peer Evaluation	25	2.5 %
Total	**1,000**	**100%**

Grading Scale

Overall Course Total	Letter Grade
920 – 1000	A
890 – 919	A-
860 – 889	B+
820 – 859	B
790 – 819	B-
750 – 789	C+
680 – 749	C
0 – 679	F

Group Projects

All the homework assignments and projects in this course are to be done in **groups of up to 5 students**. You can sign up into groups using the online group sign-up tool. Once formed, altering the groups will not be possible except in very special circumstances. Groups should be formed as soon as possible, and **no later than September 05, 2016**. **Any student who fails to do so will be assigned to a group by themselves, and will have to do all the work needed for the course individually**.

The objective of a group assignment is for everyone to contribute and learn from each other. The suggested approach is for each member of a group to work through the entire assignment first, and then to meet and discuss each other's findings to improve the final product. If you split the assignment up and assign different parts to different group members, the amount you learn, and therefore your grade, will be affected.

A private discussion area may be set up on the discussion board for internal group communications. A group chat room can also be created for each group to use. A web conference system is available for use. Teams can schedule a live web conference for team work. Please see the Web Conferencing page for instructions.

Homework Assignments

There are three group homework assignments in this course. Each of them will contribute 50 points (5%) towards the final grade. They will involve the use of SAS Enterprise Miner, and you will have 1 week to work on each homework assignment.

Term Paper

150 points (15%) of the final grade will be determined by your performance on a group term paper. The primary objective of the term paper is to encourage you to explore and think about potential applications of the techniques you will learn in this class. This group project offers you an opportunity to either

- apply your BI knowledge to real-life data and to mine managerially-relevant insights, or
- explore a frontier BI topic that is of interest to you

A 1-page proposal is due on or before **September 26, 2016** and must be approved by the instructor; **failure to submit a proposal by this date will result in a grade of zero for the paper**. Topics will be approved on a first-come-first-served basis, and no two groups can work on the same topic.

A halfway report is due by **October 31, 2016**, while the final paper is due on or before **December 02, 2016**. You have two options to choose from – you can decide to mine real data, or to conduct a detailed survey of business intelligence as applied to a particular domain. Please think and discuss carefully when you choose. While it is easy to do a project for the sake of doing a project, it is in your interest to select a topic that is not only of interest to you, but will also help your career.

Detailed requirements and expectations relating to the term paper will be provided in a separate handout.

Please note: Once each group submits the term paper, the instructor will submit them into the integrated plagiarism detection tool called Turnitin. After the paper is graded, the instructor will share the Originality Report (showing the percentage of similarity match and the sources detected with each group).

Projects

There are two group projects in this course. Both projects are related, and will be assigned together during the week of **September 19, 2016**. The projects are time consuming, and it is suggested that you get started on them as soon as they are assigned. Going through the projects will also help you understand what you can and cannot do, as far as you term paper is concerned, thereby enabling you to do a better job on it. Therefore, doing the projects early can have a wider consequence.

Project 1 will guide students through the SEMMA process in SAS Enterprise Miner, and is due on **October 24, 2016**. You will follow the steps provided in a guide from SAS; the objective is to immerse yourself in SAS EM so you get a good understanding of how it works. This guide involves methodologies beyond what you will see in this course, so you get some exposure to them through this process. This project will count towards 50 points (5%) of the final grade.

Project 2 makes you go through somewhat similar steps as in Project 1, except on a different, real dataset. It will be due on **November 14, 2016**. In this project, you should focus on the methodologies covered in this course for insight; you are only expected to know what you did in Project 1 as far as methodologies not covered in the course are concerned. This project will count towards 100 points (10%) of the final grade.

Assignment submission instructions

Locate the assignment in your eLearning course. You will submit your assignments in the required file format with a simple file name and a file extension. Click the assignment name link and follow the on-screen instructions to upload and submit your file(s). For additional information on how to submit assignments, view the Submitting An Assignment video tutorial.

Please Note: Each assignment link will be deactivated after the assignment due time. After your submission is graded, you may go to My Grades on the course menu and click the score link to check the results and feedback.

For any team project assignments, one group member will submit the assignment for the group and all group members will be able to view the results and feedback once it's been graded.

Participation/Discussions

Class participation is encouraged via the various tools described earlier. While direct answers are obviously not allowed, positive posts that help groups or the class in general will be noticed. There are 25 points for participation and discussion, and quality rather than quantity is the key grading criterion.

Peer Evaluation

Each student will evaluate himself/herself as well as other group members, on all group work, using a Peer Evaluation Form. Peer evaluation form will be submitted using the Assignment tool by **December 02, 2016**. **Students who do not submit a completed peer evaluation form will get an automatic grade of zero** (irrespective of evaluations from other group members).

Online Tests/Quizzes

There will be one online examination, worth 250 points (25% of the final grade). The exam will comprise true-false and multiple choice questions. You can access this exam clicking the exam link on the designated page. You are not allowed any books or notes, but a calculator is allowed. The exam is timed, and you are allowed only one attempt. You will have one hour to attempt the exam. This exam requires a secure browser called LockDown Browser. You will not be able to open it within Chrome, Firefox, IE or Safari. Please read the on-screen instructions carefully before you click "Begin". After the exam is graded and released, you may go to My Grades page and click the score link of the exam to view your graded submission.

Course Policies

Make-up exams

Make-ups (tests, quizzes or homework) will not be allowed without prior permission. In general, there will be no make-ups except for extenuating circumstances.

Extra Credit

There will be no work available for extra-credit.

Late Work

Late submissions will not be accepted without prior permission.

Class Participation

Students are required to login regularly to the online class site. The instructor will use the tracking feature in eLearning to monitor student activity. Students are also required to participate in all class activities such as discussion board, chat or conference sessions and group projects.

Virtual Classroom Citizenship

The same guidelines that apply to traditional classes should be observed in the virtual classroom environment. Please use proper netiquette when interacting with class members and the professor.

Policy on Server Unavailability or Other Technical Difficulties

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Desk: http://www.utdallas.edu/elearning/eLearningHelpdesk.html, 1-866-588-3192. The instructor and the UTD eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

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.