

**ISQS 3358 - BUSINESS INTELLIGENCE
FALL 2014**

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Office Hours

Tuesdays and Thursdays from 10:00 to 11:30 am. I understand these times may not work for everyone. If that is the case please email me and we will arrange for a time that is convenient for you.

Class Time, Location and CRN: TR 12:30pm - 1:50pm in BA 00021 CRN: 19903

Catalog Course Description

Introductory course to a broad range of applications and technologies for gathering, storing, analyzing, and providing access to data to help make business decisions.

Expected Learning Outcomes

Learning outcomes are organized by module. Upon completion of the course the student will be able to:

Background & Overview

- Create database designs using the relational approach
- Write SQL commands to create new databases and query existing ones
- Identify and describe the different phases of the data warehouse lifecycle
- Compare and contrast data warehouse architectures

Design

- Design star schemas using dimensional modeling techniques
- Design a data warehouse from a set of existing OLTP databases
- Implement designs that can handle change over time using a variety of approaches
- Create an enterprise bus matrix reflecting the architecture of a data warehouse

Build

- Identify and describe the components of an ETL system
- Design and implement ETL processes given source data and a data warehouse design
- Describe the process of ETL design and development

Use

- Understand the basics of multidimensional cubes and OLAP

- Create dashboards and reports for given business scenarios
- Appreciate the role and importance of metadata in business reporting

Beyond Reporting

- Analyze the implementation of business intelligence projects and their effects on the enterprise
- Explain the most important approaches to data and text mining and conceptually describe how they work and what they do
- Identify problems and solutions related to data governance (or lack thereof)

Course Materials

There is no required textbook for the class. For each class, links to assigned readings will be posted in Blackboard with sufficient advance time. There is an expectation that assigned readings will be done prior to coming to class that day (please see below for more detail on expectations for the class). Class will consist of PowerPoint presentations (which will be posted ahead of time to allow printing and note-taking, if so desired), in-class discussion and in-class computing. You should count on bringing your laptop to class (see below for the tools that will be used in the course, all of which are free and open source).

Students will also be required to purchase a case from Harvard Business School Publishing for a class discussion and subsequent homework assignment. Details will be provided later in the semester.

Tools:

- MySQL Server and MySQL Workbench (free, open source; we will be using the community edition at <http://dev.mysql.com/downloads/>, if you are using Windows scroll down to MySQL on Windows)
- Pentaho Business Analytics (free, open source; we will be using the community edition at <http://community.pentaho.com/>)

Expectations and Class Dynamics

The principal methods of in-class instruction will be lectures, case discussion, and individual or group work. Class will begin promptly. If you are late you are welcome to come in to class; please be respectful of your colleagues and avoid any disrupting noises or behavior. The same expectation applies to behavior during class; this includes no reading the newspaper, listening to music, talking over cell-phones, or doing work or studying for any other course.

Please read assigned materials before coming to class. All topics included in the assigned readings may not be covered in the lecture. The goal of the lecture portion of the class is not to tell you what the assigned readings say, but rather clarify complex issues, provide a forum to examine important topics in more detail, expand upon the assigned readings, or provide updated coverage of specific areas. Please bring questions on any topics or issues you feel you need more clarification. As well, material discussed in class may not necessarily be found in the

assigned readings (in fact, you should count on this), thus it is important to attend all class lectures.

The preferred method of communication outside from class is email and/or office hours visits. Office hours will be held as noted above, or an appointment at a mutually convenient time can be made in case these conflict with work or other courses being taken by you. Email messages typically have a 24 hour or less turnaround time.

Attendance

Attendance is not required but strongly encouraged. If for some reason you are unable to attend a session, it is your responsibility to make arrangements to obtain notes from a trustworthy source. You are ultimately responsible for any materials covered in class. If you contract a serious illness, have an accident, or any other important emergency that will prevent you from attending class for a prolonged period of time, do not hesitate to contact me to make alternative arrangements.

Scholastic Dishonesty

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

“Scholastic dishonesty” includes, but it not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act. See [OP 34.12](#) for detailed definitions of cheating, plagiarism, collusion, etc.

You should know I take all of these issues very seriously. Discussion between students regarding homework assignments and projects is encouraged, but the final submission should represent the unique work of each student or group. Any other occurrences of any of the behaviors outlined in [OP 34.12](#) will be dealt accordingly, following the procedures outlined in the relevant policies. It is wrong, and there will be consequences. Please do not do it. If you have any questions or concerns about anything you can always come talk to me beforehand.

Grading Policy and Late Submissions

Make-up examinations will not be given. If you miss an exam you should make prior arrangements with your instructor as well as provide evidence of a legitimate reason. If this is the case an alternative means to complete the assigned work will be scheduled. Otherwise, if you miss an exam without appropriate notice or valid reason, a zero will be given for that exam. Late assignments on individual or group projects will carry a twenty five percent penalty for up to 48 hours after the due date; any deliverables overdue more than 48 hours will not be accepted (see the Course Schedule for due dates). Handwritten deliverables are not acceptable unless otherwise indicated.

Learning outcomes will be assessed through a combination of exams, homework assignments, and a group project (see more details elsewhere in this syllabus). The final grade in the course will be determined according to the following scale (note that grades in this course are not necessarily subject to a curve):

90 - 100%	A
80 - 89.9%	B
70 - 79.9%	C
60 - 69.9%	D
59.9% and below	F

Your final grade will be a weighted average of the following:

Exam #1	15%
Exam #2	15%
Final Exam	30%
Homework #1	5%
Homework #2	5%
Homework #3	5%
Homework #4	5%
Group Project	20%
Total	100%

Grade Reporting and Appeals

All grades for the class will be reported using the “My Grades” feature of Blackboard. I will also communicate by email when grades are available. If you have trouble seeing your grades feel free to contact your professor, but we warned that grades will not be disclosed by phone or email. On occasion you may want to question the grading of a project or exam, ask for a clarification or interpretation, or point out an error in the grading. You are welcome to do so within seven days of your grade being posted on Blackboard. After that I do consider the issue foregone.

Examinations

There will be three exams in the course. Exam #1 will cover all assigned readings and materials as well as course content (e.g., lectures and notes) from the beginning of the semester until the date of the exam. Exam #2 will cover the same from the class following the first exam until the date of the second exam. The final exam will be comprehensive and will cover all assigned readings, materials, lectures, etc. for the entire quarter.

The format of the exams will include one or more of the following: short answer, fill-in-the-blank, true/false, and multiple choice questions, as well as problems requiring you to create or modify a diagram, procedure or representation. Each examination will provide room for you to

write your answers, but you will *need to bring a Scantron form*. The final exam will be held according to the examination schedule set by the University.

Assignments, Projects and Groups

There are both group-based and individual projects and assignments in this course (see the grade composition above). These are designed to provide hands on experience on the major topics of the course. Composition of the groups is self-determined, and each should include 5 students. Group organization, leadership, and communication is left for you to decide. Note that at the end of the course all group members will be required to submit a peer evaluation form, which will factor into your grade. Individual homework assignments may include the use of software to accomplish tasks, writing responses to questions, or case write-ups. Content and submission details will be discussed in class as the homework is assigned. The group project will require each team to design and implement an end-to-end BI solution for an assigned case. Assignment details will also be discussed in class.

Withdrawal Policies

The requirements set by the University for withdrawal will be strictly followed. You should retain all documentation of courses you have dropped.

Accommodation for Students with Disabilities

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405. See [OP 34.22](#).

Religious Holidays

A student who intends to observe a religious holy day should make that intention known to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. See [OP 34.19](#).

Rawls College of Business Career Management Center

The Career Management Center (CMC) is a convenient resource for business administration students to obtain internships and full-time jobs. You are encouraged to register with the CMC on RawlsCONNECT (a database used by employers to find out more about you) in your first semester of graduate school. The CMC can also assist you in developing your resume and honing your interview skills. Contact the CMC for more information by calling 806.742.4530, accessing the website at www.rawlscmc.ba.ttu.edu, visiting their office in BA 169, or emailing rawlscmc@ba.ttu.edu.

Intellectual Property of Course Materials

Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. On request, the instructor will usually grant permission for students to audio tape lectures, on the condition that these audio tapes are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

ISQS 3358 (Fall 2014) - Course Schedule

Class	Date	Topic	Module	
1	Tu	Aug 26	Welcome, Syllabus Overview, and Course Introduction	Background
2	Th	Aug 28	Review of Relational Modeling and SQL Language	Background
3	Tu	Sep 2	Review of Relational Modeling and SQL Language	Background
4	Th	Sep 4	Introduction to DW/BI and DW Architectures	Background
5	Tu	Sep 9	DW Lifecycle Overview and Intro to Pentaho Stack	Background
6	Th	Sep 11	Dimensional Modeling Basics	Design
	Fr	Sep 12	Homework #1 due by midnight	
7	Tu	Sep 16	Basic Modeling Techniques and Design Considerations	Design
8	Th	Sep 18	Dealing with Change	Design
9	Tu	Sep 23	Advanced Issues and Techniques	Design
10	Th	Sep 25	Indexing and Physical Design Considerations	Design
11	Tu	Sep 30	Review for Exam #1 - Classes 1-10	
12	Th	Oct 2	Exam #1	
13	Tu	Oct 7	Introduction to ETL: Extract, Transform, Load	Build
14	Th	Oct 9	Data Extraction	Build
	Fr	Oct 10	Homework #2 due by midnight	
15	Tu	Oct 14	Cleaning and Conforming	Build
16	Th	Oct 16	Loading Data	Build
	Fr	Oct 17	Team Project Due - Part #1	
17	Tu	Oct 21	ETL Design and Development	Build
18	Th	Oct 23	Introduction to Business Intelligence Applications	Use
19	Tu	Oct 28	Metadata and Basic Reporting	Use
20	Th	Oct 30	Multidimensional Cubes and OLAP	Use
	Fr	Oct 31	Homework #3 due by midnight	
21	Tu	Nov 4	Dashboard Design	Use
22	Th	Nov 6	Review for Exam #2 - Classes 13-21	
23	Tu	Nov 11	Exam #2	
24	Th	Nov 13	Business Intelligence in the Enterprise	Beyond
	Fr	Nov 14	Team Project Due - Part #2	
25	Tu	Nov 18	Data Governance and Master Data Management	Beyond
26	Th	Nov 20	Analytics: Introduction to Data Mining	Beyond
	Fr	Nov 21	Homework #4 due by midnight	
	Mo	Nov 24	Team Project Due - Final	
27	Tu	Nov 25	Analytics: Introduction to Text Mining	Beyond
28	Tu	Dec 2	Review for Final Exam - Comprehensive	
Saturday, December 6		Final Exam - 1:30pm		

Note: Reasonable effort will be made to follow this schedule. That said, the professor reserves the right to make changes as needed in order to accommodate unexpected events, variations in class progress, and facilitate student learning. Any such changes will be communicated in class, by email and noted in the schedule itself.