Course	MIS 6309.501 Business Data Warehousing (ACCT6309.501)
Instructor	Naser Islam
Term	Fall 2019
Meetings	Thursday 7:00 PM to 9:45PM. Room JSOM 12.210

Instructor: Naser Islam

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Professor Office Hours: Thursday 5:00pm to 6:00pm

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TA Office Hours: Friday 1:30PM to 3:30PM
Tuesday 4:00PM to 6:00PM

TA Office: JSOM 2.604

Prerequisites

1. While this course has no pre-requisites nor co-requisites, students without prior Information Technology exposure and/or database exposure will face a steeper learning curve.
2. An introductory course in information technology covering information systems, internet, technology-enabled business, spreadsheets, databases, digital representation of data, basics of hardware and software, and business processes.
3. Basic skills in Microsoft Excel – working with tables, formulae, sorting, filtering and charting
4. Introductory course on statistics.
5. Students need to carry their comet card for every lecture to mark their attendance.

Course Description

This course provides the student with in depth knowledge of Data Warehousing principles, Data Warehouse techniques, and Business Intelligence systems. The course introduces the topics of Data Warehouse design, Extract-Transform-Load (ETL), Data Cubes, and Data Marts. Students will create Business Intelligence using Data Warehouses with several OLAP and analytical tools.

This course section counts towards SAP Certification. The primary SAP products used in this course will be SAP BusinessObjects (BOBJ).

Learning Outcomes

1. Analyze data to generate information and knowledge that lead to informed decisions for businesses.
2. Author enterprise dashboards that are used to summarize and visualize data in a way that supports insight into trends and "what-if" analysis in real time.
3. Show how business intelligence can be derived from data warehouses
4. Create standard reports for business users
5. Derive insightful trends using data mining techniques
6. Apply the latest in analytics technology in real world case studies in the areas of business, entertainment, climate change etc.
7. Students will develop competency in query development and essential business intelligence reporting.

8. Students will demonstrate competency in data modeling, including dimensional modeling.
9. Students will learn steps involved in development of an enterprise data warehousing solution and at least one BI tool from end-to-end perspective.

Suggested Texts & Materials

Textbook:

1. **Database Systems –** Design, Implementation, and Management, 12e Edition, Carlos Coronel & Steven Morris Cengage Learning ISBN: 9781305627482
2. **SAP BW/4HANA: An Introduction,** 1st Edition 2017, Jesper Christensen, Joe Darlak, Riley Harrington, Li Kong, Marcos Poles, Christian Savelli.
   SAP Press (www.sap-press.com/sap-bw4hana_4377/) ISBN 978-1-4932-1531-7
3. **Practical Guide SAP BW 7.4,**3rd Edition,Amol Palekar,Bharat Patel,Shreekant Shiralkar
   SAP Press (https://www.sap-press.com/sap-bw-74-practical-guide_3733/) ISBN 978-1-4932-1191-3
4. **Practical Analytics**, 1st Edition 2015, Nitin Kalé & Nancy Jones, Epistemy Press (epistemypress.com) ISBN: 978-0-9856008-9-1. Available for purchase here - http://epistemypress.com/books/practical-analytics/

Course Note:
All course materials will be made available through eLearning. Lectures are delivered face to face in classroom.

Technology Proficiency and Hardware & Software Required:
Students should use their own computers, however, JSOM lab computers have all the required software available. Most of the SAP software required for the class is Windows based, specifically the once you will be using. We do not support your laptop.

- SAP GUI 7.5 for Windows
- SAP BW
- SAP Business Explorer Query Designer
- SAP BusinessObjects Analysis for Microsoft Office
- SAP BusinessObjects Design Studio
- SAP Predictive Analytics
- SAP Crystal Reports
- SAP Lumira
- Eclipse
- Microsoft Excel and Access

Note: Students need to carry their comet card for every lecture to mark their attendance.

Description and Assessment of the Assignments:

Homework – Most homework is computer based. Homework should be turned in to eLearning on time. Grading will be based on completeness, accuracy, and timeliness.

Case Studies – Require students to read, assess, compare, and evaluate a real business case. Then they should use the tools they have learned in the class to argue their findings and recommendations in the form of a quantitative report.

Exams – Are combination of written, MCQ, and True/False in UTD testing Center. They are based on concepts and not on particular tools.

Assignment Submission Policies:
It is the responsibility of the student to make sure case studies and assignment are turned in on time. Make sure you follow the procedures outlined in each assignment or case study (Blackboard submissions).
Late assignment submissions will be subject to a late penalty of 50%. No assignments will be accepted later than **24Hrs** from the due date.

Additional Policies
No make-up exams (except for documented medical or family emergencies) will be offered nor will there be any changes made to the Final Exam schedule, except as permitted by university rules. Lecture attendance is not mandatory however it is recommended that students not miss any lecture.

Course Schedule, Assignments, and Due Dates

This is a tentative class schedule; changes to the schedule will be posted in eLearning.

WEEK	CONTENT / READINGS	ASSIGNMENTS
Week – 1 08/22	**Course Introduction:** Discuss course objectives, outcomes, and syllabus. Understanding business process, functional areas & modules. Enterprise Systems & primary data source.	Reading: Lecture slides and other materials in eLearning Assignment: None
Week – 2 08/29	**Review Enterprise System and Enterprise Data:** SAP ES architecture R/1 to Next-Gen/5 and Net Weaver. Organizational Data, Master Data of customer, product, vendor, & employee; Transactional Data, and Operational Data, Metadata. On-Line Transactional Processing & On-Line Analytical Processing, Difference between OLTP and OLAP. Data-driven decision making. Please install SQL Server on your laptop by next class Meeting	Reading: Lecture slides Classwork – 1 Due today by 11:00 pm Bring a department store receipt with you in class.
Week – 3 09/05	**Relational Database Review:** Two dimensional structure – flat file. Relational Data Management: structure, manipulation, integrity. Components of RDB –table, entities, attributes, rows, records, and relationships – Primary Keys & Foreign Keys; Inner Joins and Outer Joins. Dimensional perspective of database. **Assignment – 1: SQL Based Project - working with OLTP data** **Quiz – 1: A subjective test based on material covered thus far**	Reading: Lecture slides Textbook: Database Systems: Chapter – 1 & 2 Classwork – 2: Due today by 11:00 pm Assignment – 1 Due by Wed 09/11 11:00 pm Bring your laptop to the class
Week – 4 09/12	**The Data Warehousing:** What is data warehousing, history of data warehousing, its design & architecture. Data warehousing for better business decision, data at your fingertip. Data Warehousing Workbench, components & functionality. **Assignment – 2: To derive business intelligence using Microsoft** **Excel Pivot Tables**	Reading: Lecture slides Textbook: SAP BW 7.4 Chapter 2 Assignment – 2 Due by Wed 09/18 11:00 pm
Week – 5 09/19	**SAP HANA Database (HDB) for In-Memory Computing:** Classical Vs. In-Memory Database, HDB Architecture – columnar DB, parallel processing, and partitioning strategy. Application Platform, HANA as DB for SAP Application, Components Relational Vs Multidimensional OLAP.	Reading: Lecture slides Textbook: SAP BW/4HANA Chapter - 2

	Assignment – 3: Use Microsoft Excel Pivot Tables for analysis.	Assignment – 3 Due by Wed 09/25 11:00 pm Classwork 3: Due by 11:00
Week – 6 09/26	**Data Warehousing on SAP BW/4HANA:** History of SAP BW, SAP BW/4HANA Overview-Design principles, Data Models, Openness, Modern Interfaces, High Performance Business Scenario, Evaluation of SAP BW, SAP BW Layers, Navigation, Business data Warehousing design and architecture, Components and Functionality **Quiz – 2: A subjective test based on material covered thus far**	Reading: Lecture slides Textbook: SAP BW/4HANA Chapter – 1
Week – 7 10/03	EXAM – I Wednesday, October 3, 2019 between 5:00 PM – 8:00 PM at the testing center at Synergy Park North(SPN2)	**YOU MUST RESERVE YOUR SEAT 72 HOURS PRIOR TO EXAM TIME**
Week – 8 10/ 10	**Extraction, Transformation and Loading (ETL):** Extraction from heterogeneous source systems. Data cleansing and transformation, Loading data and automation. **Assignment – 4: Case Modelling – An introduction to modelling tools used in SAP BW curriculum**	Reading: Lecture slides Textbook: SAP BW 7.4 Chapter – 7 & Practical Analytics, Chapter – 4 Classwork 4: Due by 11:00 Assignment 4– 10 Due by Wednesday 10/16 11:00 PM
Week – 9 10/17	**Data Analytics Overview:** What & Why Data Analytics, Business & data, data driven decision making, Analytic Methodology. Model Company – GBI **Assignment – 5: Data Acquisition Case Study –Load transactional data from the source system into the data acquisition layer of the data warehouse** **Quiz – 3: A subjective test based on material covered thus far**	Reading: Lecture slides Textbook: Practical Analytics, Chapter – 1 Assignment – 5 Due by Wednesday 10/23 11:00 PM
Week – 10 10/24	**Data Foundation & Acquisition:** Structured and Unstructured Data, Source Systems, and Data Gathering – Collection & Staging. Modeling Perspectives, Objectives – InfoObjects (Characteristics, Key Figure, and Unit). SAP BW/4HANA InfoProviders. Structured and Unstructured Data, Source Systems, and Data Gathering – Collection & Staging. **Assignment – 6: Modelling Basics – Teaches the basic modelling techniques**	Reading: Slides & Materials Textbook: Practical Analytics, Chapter – 2 Text book: SAP BW/4HANA Chapter -6 Classwork 5: Due by 11:00 Assignment – 6 Due by Wednesday 10/30 11:00 PM
Week – 11 10/31	**Dimensional Data Modeling:** Basics of MDDB – Facts & Dimensions, horizontal Vs. vertical data storage (OLTP vs. OLAP), and leading to BA & BI	Reading: Slides & Materials Textbook: SAP BW/4HANA Chapter – 5 & Practical Analytics, Chapter – 3

	Transactional systems vs. informational systems. Data warehouses. Multidimensional (Composite) modeling. Star schema and snowflake schema. Fact and dimension tables. Modeling Perspectives, Objectives – InfoObjects (Characteristics, Key Figure, and Unit). SAP BW/4HANA InfoProviders. **Assignment – 7: Master Data – Shows how to load master data from the source system into the data Warehouse using data flow**	Assignment – 7 Due by Wednesday 11/06 11:00 PM
Week – 12 11/07	**Slicing and Dicing:** Basics of slicing and dicing, Pivot tables. Working with aggregation functions & hierarchies. Exceptions and conditions. Slicing and dicing multidimensional data (from cubes) **Quiz – 4: A subjective test based on material covered thus far**	Reading: Slides & Materials Textbook: Practical Analytics, Chapter – 5
Week – 13 11/14	**Reporting:** What are reports? Where are they used? Building reports from one or more data sources. Formatting reports. Creating summaries. **Assignment:** Create a formatted report based on live financial data (from SAP ERP) using SAP Crystal reports. Use SAP Crystal Reports to connect to a data warehouse, then author a monthly report that show the accounts receivables from customers. **Assignment – 8: Enterprise data warehouse- Shows how to create an enterprise data warehouse**	Reading: Slides & Materials Textbook: Practical Analytics, Chapter – 6 Assignment – 8 Due by Wednesday 11/20 11:00 PM
Week – 14 11/21	**Dashboards:** What are dashboards, cockpit, and scorecards? How to author a dashboard? Adding interactivity. Deploying dashboards. Mobile apps for analysis.	Reading: Slides & Materials Textbook: Practical Analytics, Chapter – 8
Week – 15 11/28	FALL BREAK NO CLASS	
Week – 16 12/05	EXAM – II Wednesday, December 5, 2019 between 5:00 PM - 8:00 PM at the testing center at Synergy Park North(SPN2)	**YOU MUST RESERVE YOUR SEAT 72 HOURS PRIOR TO EXAM TIME**

Assignment Guidelines

- All reading is to be completed before class on the date posted.
- All assignments must be submitted at the beginning of class. Late assignments are **NOT** accepted.
- Written assignments must adhere to the APA style guide of formatting, citing, and referencing.
- Descriptions of assignments will be posted as they are assigned.
- The exams will consist of multiple choice, fill-in-the-blank, and short essay questions. The final exam is not comprehensive. Make-up exams will be in the form of essays.
- No extra credit assignments are available
- General grading criteria can be found in eLearning. Assignment specific grading criteria will be included with the assignment instructions.
- **All assignments will be submitted via eLearning. I do *NOT* accept assignments via email. If you submit an incorrect assignment or need to resubmit your assignment in eLearning you will be allowed to resubmit as long as it is before the due date. Send me an email 24 hours prior to the due date and I will clear your submission. Upon doing so, you will be able to resubmit.**
- **DO NOT CHEAT and DO NOT PLAGIARIZE.**

Grading

This course will feature a mix of activities and written and verbal assignments that may be in class or on campus. Homework will include readings from the text, assignments, and activities that usually require the student to complete some type of task. The instructor will provide detailed instructions as well as the grading criteria for each assignment. Please consult the course schedule for deadlines.

Grading Scheme

Grade Component	Points
Assignments	**28%**
Classwork	**5%**
Pop Quizzes	**10%**
Attendance & Class Participation	**7%**
Exams I & II	**50%**
Total	**100%**

Scoring

Final Point Total	Letter Grade
93-100	**A**
90-92.99	**A-**
87-89.99	**B+**
83-86.99	**B**
80-82.99	**B-**
77-79.99	**C+**
73-76.99	**C**
70-72.99	**C-**
67-69.99	**D+**
63-66.99	**D**
60-62.99	**D-**
0-59.99	**F**

Course & Instructor Policies

- **Professional Conduct**: expected at all times from all students.
  Examples of unprofessional conduct includes, but is not limited to:
    - Trying the "game the system"
    - Coming late to class (without good reason)
    - Leaving early from class (without good reason)
    - Talking in class
    - Working on other subjects while in class
    - Using electronic devices for other than the course materials
- **Make-up Exams**: restricted to documented emergencies with sufficient written proof provided. Make-up exams will be in essay format and content will differ from the regular exams. Since make-up exams will differ in content, no curve fitting may be applied at either the exam level or the semester level.
- **Extra Credit**: no extra credit assignments are available.
- **Class Attendance**: required, except for legitimate emergencies. Please be on-time and remain until class is dismissed.
- **Late Work**: 24-hour grace period to allow for technical problems with assignment submission. After the grace period, reduced by 25 % per 24-hour period. Please do not ask for any extensions or lifting of late penalties, unless it is a documented emergency with sufficient written proof provided.
- **Instructor Response Policy:**
    - For questions about course material, before contacting the instructor, please follow the following protocol:
        - If in class, ask questions in class so everyone can benefit.
        - If between classes, if possible, wait until the next class to ask questions so everyone can benefit.
        - Come to the office hours (instructor's or the TA's) to ask questions.
        - If it's urgent and/or cannot be done using one of the methods above:
            - First, email the TA with the question
            - Allow 24 hours (not including weekends, nor holidays, nor breaks) for the TA to respond. TA will not be available during breaks.
            - If the TA's answer does not satisfy you, please forward the email to instructor (Please do not send emails to instructor unless you have tried to resolve it with the TA first)
            - Instructor may save them until the next class and read and answer them at the start of class so everyone can benefit.
    - For personal questions or issues that only pertain to you, please follow the following protocol:
        - Come to instructor's office hour
        - If it cannot be handled in office hours, please email the instructor
    - Instructor will attempt to reply to all emails within 48 hours, not including weekends, nor holidays, nor breaks. Instructor will not generally be available during breaks.
- **ELearning**: will be used for class content and any changes to class content.

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.
