HIMT425FA17 - Data Warehousing and Mining

Course Description and Overview

The course introduces the elements of the data warehouse development methodology (design, acquisition, management, analysis, query, mining, and visualization), focusing on serving the informational and analytical needs of an enterprise. It examines the concepts of the data warehouse and the data-mart from various points of view (purpose, architecture, utilization, and security) and addresses the process of creating a data warehouse/data-mart solution from identifying an enterprise's informational and analytical needs to producing business intelligence (BI) by extracting useful information from the data warehouse using data mining methods and models. The course also examines the issues of data warehousing effectiveness in supporting strategic decision making.

Course Objectives

After completing this course, you will be able to do the following:

- Identify the most important informational and analytical needs of an enterprise, and develop a data warehouse solution that serves these needs.
- Use the data warehouse solution to perform simple data mining tasks.
- Re-engineer the operational database(s) of a given enterprise and provide a data warehouse design focused on addressing the most important informational and analytical needs of the enterprise.
- Apply specific design techniques (data partitioning; denormalization; multidimensional, star, and snow-flake design models) to address the data structuring challenges of the data warehouse development process.
- Address the challenges of data acquisition and the ETL (Extract/Transform/Load) process.
- Provide BI by extracting useful information from the data warehouse.
- Use analysis and data mining tools: Online Analytical Processing (OLAP), Relational OLAP (ROLAP), Multidimensional OLAP (MOLAP), Hybrid OLAP, Decision Support Systems (DSS), Executive Information Systems (EIS), and others.
- Assess the effectiveness and usability of data warehousing solutions.
- Apply one or more basic data mining techniques to identify frequent patterns, associations, and correlations in the data.
- Apply one or more basic data mining techniques to make categorical predictions on new incoming data.
- Create, populate with data, and extract useful information from a data warehouse.
- Address the challenges of using data warehousing in strategic decision making, calculate the costs, and name the benefits and limitations of such an approach.

HIM Curriculum Competencies

This course does not address any competencies directly.

Course Materials

Required Textbook

Course Outline

- Decision support systems
- Data warehouse architecture and design
- Data acquisition
- Data-marting
- Software and hardware requirements
- Security and performance
- Data analysis
- Data mining

Course Activities

Quizzes

The quizzes can be found on the course site under the Quizzes tab. They account for half of your grade in this course and can be quite challenging to work through. Please let your instructor know if you need help, or use the Discussions area to post your questions and reach out to the other students in the class for help and feedback.

Lecture Quizzes

Some of the commentaries include quizzes to assess your understanding of the material.

Discussions

Share questions or ideas about the readings in your textbook, the course materials, or quizzes. Reply to your classmates' posts.

Exams

There will be one comprehensive final exam. No make-up exams will be given.

Extra Credit Assignments

You can earn as much as 10% applied to your final grade by working on extra credit assignments. The extra credit assignments will be individualized and offered upon request. The first extra credit assignment is worth 4%; the second is worth 6%. Please let your instructor know if you are

interested in working on an extra credit assignment. Completed extra credit will be submitted via Dropbox.

Course Policies

- To receive full credit, all work must be submitted on time.
- To be acceptable for grading, all work must be neat, readable, and professional looking. Work that fails to do so will be assigned a score of zero.
- All work is due as indicated in the course calendar. No late work will be accepted.
- Missing work will receive a grade of 0.

Grading

The final course grade will be calculated as follows:

50% Quizzes
10% Participation in the weekly discussions
40% Final Exam
10% Extra Credit Assignments (provided by instructor on request)

Course Calendar

Quizzes are due on Wednesday or Sunday, 11:59 p.m., CST, unless otherwise specified.

Please take advantage of the Discussions area and post any questions you may have before attempting a quiz.

Segment	Start	Assignments	Due Date
Lesson 1		Introduction Chapter 1 Part I Quiz Lesson 1 Discussion	
Lesson 2		Chapter 1 Part II Quiz Lesson 2 Discussion	
Lesson 3		Chapter 2 Part I Quiz Lesson 3 Discussion	
Lesson 4		Chapter 2 Part II Quiz Lesson 4 Discussion	
Lesson 5		Chapter 3 Part I Quiz Lesson 5 Discussion	
Lesson 6		Chapter 3 Part II Quiz Lesson 6 Discussion	
Lesson 7 (2 weeks)		Chapter 4 Part I Quiz Lesson 7 Discussion	

Lesson 8		Chapter 4 Part II Quiz Lesson 8 Discussion	
Lesson 9		Chapter 6 Part I Quiz Lesson 9 Discussion	
Lesson 10		Chapter 6 Part II Quiz Lesson 10 Discussion	
Lesson 11 (2 weeks)		Chapter 8 Part I Quiz Lesson 11 Discussion	
Lesson 12		Chapter 8 Part II Quiz Lesson 12 Discussion	
Final		**Final Exam**	