MET CS 689 Data Warehousing

Course Designator/Course Number:
MET CS 689

Course Title:
Designing and Implementing a Data Warehouse

Textbook:
1. Data Warehousing Fundamentals: A Comprehensive Guide for IT Professionals by Ponniah, ISBN: 978-0-470-46207-2

Course Length:
This is a semester long 4 credit hour graduate course. Depending on program needs the class can be scheduled during the Fall, Spring or Summer semester. In the Fall and Spring semesters the class meets once a week for 3 hours over a total of 15 weeks. In the Summer semester the class meets once a week for 3.5 hours over a total of 12 weeks. In all cases there is a total of 45 contact hours.
The course requires significant outside of class work, consisting of assigned readings, homework, research (library and internet) and project. The estimate for outside of classroom work is at least 4 times the number of contact hours or a minimum of 180.

Course Description:
This course provides students with the technical skills required to plan, implement, and maintain a data warehouse using a DBMS such as Oracle Warehouse Builder or Microsoft SQL Server Analysis Services. It describes basic data warehousing concepts. Key topics: Design a data warehousing system; implement a database designed with a star schema, gather data from primary data sources, transform data, and load data in to a DBMS. Students will create a cube using OLAP and analyze cube data using client applications. Upon successful completion, students will be familiar with the typical data warehouse components and architecture, and have an understanding of the practical uses of data warehousing. 4 cr

Course Learning Objective:
1. Identify the need for data warehousing and the components of a Data Warehouse Environment
2. Describe the Data Warehouse: The Building Blocks. The Process: data modeling, data extraction, data quality, data distribution, DBMS, data access and reporting and system management.
3. Describe Enterprise Data Warehouses and Data Marts Examine possible configurations and their advantages and disadvantages
4. Comprehensive understanding of Data Extraction, Transformation, and Loading.
5. Explain the functionality and positioning of operational data stores within a data warehouse environment
6. Discuss OLAP Servers
7. Describe relational OLAP and multidimensional proprietary databases
8. Examine the impact on the overall information management architecture
9. Advanced Topics: Trends in Data Warehousing; Data Mining Basics; Data Warehousing and the Web.
10. Planning and Project Management: Defining the business requirements and sound warehouse design as the driving force for a secure Data Warehouse.

Topics and Readings

Introduction To Data Warehousing	1-2
	Handouts
Review of Pertinent Database Techniques	4-5
Planning & Requirements	10-11
	12
Dimensional Modeling	
	13
ETL	
	14
Data Preprocessing	
Intro To DSS	
	15
Midterm Exam 25%	
	5-6
Datawarehousing and DSS	7, 8
Prototyping, Infrastructure Intro, Dialog Design	10
	17
Data Warehouse Architecture	3 and Handouts
Data Warehousing Design	
Data Mining Overview	
Emerging Trends	
Final Exam 35%	

Method of Instruction:
This course is primarily lecture based. Students are required to complete homework dealing with data warehouse design and implementation. Students complete a class project where they design and implement a data warehouse and perform OLAP analysis on the data warehouse. Data for the data warehouse will come from a

selection of 4 different data sets, or data from the students work environment can be utilized.

Evaluation Methods:
Final course grades will be determined by a weighted average of the homework assignments, research project, and mid-term and final examinations in approximately the
following manner
Homework Assignments 30%
Mid-Term Examination 25%
Project 10%
Final Examination 35%

Course Contact: Dan Hebert