

**DEREE COLLEGE SYLLABUS FOR:**

**CS 3465 BUSINESS INTELLIGENCE AND DATA WAREHOUSING – LEVEL 6**

(Updated Fall 2010 )

**UK Credits: 15**

**PREREQUISITES:**

CS 1070 Introduction to Information Systems  
ITC 2088 Introduction to Programming  
CS 3260 Fundamentals of RDBMS  
MA 1008 College Algebra

**CATALOG  
DESCRIPTION:**

Data warehouse characteristics, architecture, models and processes. Business processes and data flows. OLAP versus OLTP systems. Data analysis, extraction, transformation and data loading methods. Data quality. Data warehouse: building, maintaining and accessing techniques.

**RATIONALE:**

The course exposes students to topics involving planning, designing, building, populating, and maintaining a successful data warehouse. Students learn the reasons why data warehousing is a compelling decision support solution, and study implementation approaches using proven methodologies and technologies.

**LEARNING OUTCOMES:**

As a result of taking this course, the student should be able to:

1. Analyze data warehouse characteristics and plan warehouse data (Dimensions, Facts, Hierarchies, Roll-ups)
2. Illustrate trends towards data warehousing and data mining.
3. Critically use all the data transformation processes.
4. Estimate hardware infrastructure requirements.
5. Compare data warehouse modeling alternatives.
6. Design and implement a data warehouse.

**METHOD OF TEACHING  
AND LEARNING:**

In congruence with the learning and teaching strategy of the College, the following tools/activities are used:

- Lectures and class discussions. Laboratory practical sessions and problem solving.
- Office hours held by the instructor to provide further assistance to students.
- Use of the Blackboard Learning platform to further support communication, by posting lecture notes,

assignment instruction, timely announcements, and online submission of assignments.

**ASSESSMENT:**

**Summative:**

Project: requirements analysis/application development/documentation	<b>50</b>
Final Examination (2-hour comprehensive): combination of short answers to essay questions and case problems	<b>50</b>

**Formative:**

Coursework: case problems	<b>0</b>
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The formative assessments aim to shape teaching along the semester and prepare students for the summative assessments.

The project tests Learning Outcomes 1,3,5,6.

The final examination tests Learning Outcomes 1-6.

(Guidelines and assessment rubrics are distributed on the first day of classes along with the course outline.)

**INDICATIVE READING:**

**REQUIRED READING:**

Connolly, Thomas, Carolyn Begg and Anne Strachan. Database Systems: A Practical Approach to Design, Implementation and Management. Addison Wesley, latest edition, ISBN-13: 9780321294012

**RECOMMENDED READING:**

- William H. Inmon. Building the Data Warehouse. Wiley, latest edition, ISBN 0-7645-9944-5
- E.F. Codd, S.B. Codd, and C.T. Salley "Providing OLAP (On-line Analytical Processing) to User-Analysts: An IT Mandate". Codd & Date, Inc 1993.
- T. Berners-Lee, J. Hendler, and O. Lassila. The Semantic Web. Scientific American, 279, 2001.

**COMMUNICATION REQUIREMENTS:**

Daily access to the course's site on the College's Blackboard CMS. Effective presentation skills using proper written and oral English. Communicate and coordinate during team activities.

**SOFTWARE REQUIREMENTS:**

Latest version of Oracle Express Database (OracleXE) and Oracle Essbase Studio

**WWW RESOURCES:**

The Data Warehousing Institute - provider of in-depth conferences, education, and training in the data warehousing and business intelligence industry. <http://www.dw-institute.com/>

Data Warehousing Information Center - provides information on tools and techniques to design, build, maintain, and retrieve information from a data warehouse.  
<http://www.dwinfocenter.org/>

DataWarehousing.com- showcases data warehousing and integration resources. <http://www.datawarehousing.com/>

**INDICATIVE CONTENT:**

1. Business Drivers
  - 1.1. A Concise History of Data Warehousing,
  - 1.2. What is OLAP & Decision Support Systems
  - 1.3. Business Vs Data Requirements
  - 1.4. Reasons to Build a Data Warehouse
  - 1.5. The Technology Solution
2. Data Warehousing Concepts
  - 2.1. Definition
  - 2.2. Characteristics of a Data Warehouse
  - 2.3. Data Marts
  - 2.4. Identifying Business Data Flow & Processes
  - 2.5. Data sources
  - 2.6. The Data Extraction process
  - 2.7. Transformation process
  - 2.8. Assuring Data Quality
  - 2.9. Transportation process
  - 2.10. Maintaining Warehouse Data
  - 2.11. Metadata
3. Data Warehouse Architecture and Models
  - 3.1. Warehouse architecture
  - 3.2. Identifying Warehouse Data: Fact data, Dimension data, Hierarchies, Summaries (roll-ups)
  - 3.3. Data Warehouse models: Star and Snowflake
  - 3.4. Modelling the Data Warehouse
4. Accessing a Data Warehouse
  - 4.1. User query requirements and User query progression
  - 4.2. OLAP Access
  - 4.3. Relational OLAP (ROLAP) Access
  - 4.4. Multidimensional OLAP (MOLAP)
  - 4.5. OLAP Query Techniques
  - 4.6. Definition of Data Mining
5. The Data Warehouse Challenge
  - 5.1. The DW project:
  - 5.2. Scope Definition
  - 5.3. Prototyping
  - 5.4. ETT Tool selection
  - 5.5. Implementation

- 5.6. Risks to: Organization, Business, Operations
- 5.7. Technical considerations