FIRST SEMESTER 2019-2020

COURSE HANDOUT (PART II)

Date: 24/07/2019

In addition to Part-I (general handout for all courses appended to this time table) this portion gives further details pertaining to the course.

Course No.: **SS G515**

Course Title: **Data Warehousing**

Instructor-in-charge: **Narasimha Bolloju (narsi.bolloju@hyderabad.bits-pilani.ac.in)**

1) Scope and Objectives

Decision makers require access to all the organization's data, wherever it is located, in appropriate structure and detail that helps in their decision making. This course will involve an in-depth study of various concepts and techniques needed to design, develop, and maintain a data warehouse. The course also offers OLAP techniques and business intelligence tools for accessing data warehouses and data marts by the decision makers. This course has the following learning objectives:

- to understand concepts of data warehousing, role of data warehouses in provisioning strategic information to decision makers at various organizational levels,
- to gather and analyze requirements for building data warehouses by selecting a suitable data warehouse architecture and developing necessary dimensional models, and
- to apply suitable techniques for online analytical processing using business intelligence and tools.

2) Text Books:

T1. Ponniah Paulraj, ***"Data Warehousing Fundamentals for IT Professionals"***, WSE, 2ed., 2010.
T2. Kimball Ralph & M Ross, ***"The Data Warehouse Toolkit",*** WSE, 3rd ed., 2013.

3) Reference Books

R1. Anahory S, & Dennis M, "***Data Warehousing in the Real World"***, Addison-Wesley, 2000.
R2. Kimball R, Reeves L, Ross M, & Thornthwaite, W, ***"The Data Warehouse Lifecycle Toolkit",*** John Wiley, 1998.
R3. Adamson C, & Venerable M, "***Data Warehouse Design Solutions***", John Wiley, 1998.
R4. Inmon, WH, ***"Building the Data Warehouse"***, John Wiley, 2002.

4) Course Plan

Lecture No.	Learning Objectives	Topics	References
1-12	• To explain the need for data warehouses in organizations • To design a simple data warehouse using the dimensional modeling technique • To develop reports and dashboards on a populated data warehouse	• Introduction to data warehousing • Components of data warehouses • Processes for building data warehouses • Introduction to dimensional modeling • Introduction to reports and dashboards for business intelligence (BI)	T1: 1, 2 T2: 1, 2
13-18	• To differentiate popular data warehouse architectures • To specify business requirements for data warehouse • To explain data warehouse development processes • To apply dimensional modeling technique for data warehouse	• Popular architectures for data warehouses and data marts • Gathering and defining business requirements • Kimball's DW/BI lifecycle • Principles of dimensional modeling (star schemas and data cubes)	T1: 4,6,7,10 T2: 2,18

	design		
19-24	• To explain the role of metadata in data warehousing • To elaborate necessary processes and tasks associated with ETL • To explain mechanisms for ensuring data quality in data warehouses	• Metadata – need, common types and providing metadata • Extract-transform-load (ETL) – concepts, operational source systems, requirements, processes and tasks, data integration • Data quality challenges and techniques/tools for ensuring data quality	T1:9, 12,13 T2: 19, 20
25-30	• To explain online analytical processing • To apply dimensional analysis techniques • To elaborate differences among OLAP models • To differentiate among information delivery mechanisms	• Online analytical processing (OLAP) – need, major functions and feature • Dimensional analysis • OLAP models (MOLAP, ROLAP, HOLAP) • Types of information delivery mechanisms and supporting tools	T1: 14, 15 T2: 17
31-40	• To explain advanced dimensional modeling and ETL techniques • To elaborate data warehouse performance enhancement methods • To explain the trends in data warehousing and BI	• Advanced dimensional modeling • Real time data warehouses • Advanced ETL techniques • Data warehousing trends and BI including Web-enabled data warehouses • Data warehouse physical design and performance enhancement techniques	T1: 3, 11, 16, 18, 20 T2: 1, 17, 19, 20

5). Evaluation Schedule

Component	Duration	Weightage(%)	Date & Time	Remarks
Mid Sem Test	90 Mins	20	03/10 09:00 – 10:30 am	Closed Book
Case study presentation + discussion	NA	10	Details will be provided in the first week	Open Book/ During the lab sessions
Project work + Lab Sessions	NA	30	Details will be provided in the first week	Open Book/Take Home
Comprehensive Examination	3 Hours	40	09/12 FN	Closed Book

6). Chamber-Consultation Hours T.B.A. in the class.

7). Notices

All the notices concerning this course will be posted on the course page on Google Classroom.

8) Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor-in-charge
SS G515