



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](mailto: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:**

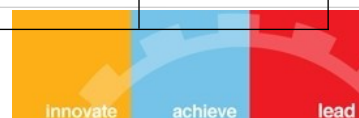
- T1.** Ponniah Paulraj, *"Data Warehousing Fundamentals for IT Professionals"*, WSE, 2ed., 2010.  
**T2.** Kimball Ralph & M Ross, *"The Data Warehouse Toolkit"*, WSE, 3<sup>rd</sup> ed., 2013.

**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	<ul style="list-style-type: none"><li>• To explain the need for data warehouses in organizations</li><li>• To design a simple data warehouse using the dimensional modeling technique</li><li>• To develop reports and dashboards on a populated data warehouse</li></ul>	<ul style="list-style-type: none"><li>• Introduction to data warehousing</li><li>• Components of data warehouses</li><li>• Processes for building data warehouses</li><li>• Introduction to dimensional modeling</li><li>• Introduction to reports and dashboards for business intelligence (BI)</li></ul>	T1: 1, 2 T2: 1, 2
13-18	<ul style="list-style-type: none"><li>• To differentiate popular data warehouse architectures</li><li>• To specify business requirements for data warehouse</li><li>• To explain data warehouse development processes</li></ul>	<ul style="list-style-type: none"><li>• Popular architectures for data warehouses and data marts</li><li>• Gathering and defining business requirements</li><li>• Kimball's DW/BI lifecycle</li><li>• Principles of dimensional modeling (star schemas and data cubes)</li></ul>	T1: 4,6,7,10 T2: 2,18





**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE,**  
Pilani  
Hyderabad Campus

	design		
19-24	<ul style="list-style-type: none"> <li>To explain the role of metadata in data warehousing</li> <li>To elaborate necessary processes and tasks associated with ETL</li> <li>To explain mechanisms for ensuring data quality in data warehouses</li> </ul>	<ul style="list-style-type: none"> <li>Metadata – need, common types and providing metadata</li> <li>Extract-transform-load (ETL) – concepts, operational source systems, requirements, processes and tasks, data integration</li> <li>Data quality challenges and techniques/tools for ensuring data quality</li> </ul>	T1: 9, 12, 13 T2: 19, 20
25-30	<ul style="list-style-type: none"> <li>To explain online analytical processing</li> <li>To apply dimensional analysis techniques</li> <li>To elaborate differences among OLAP models</li> <li>To differentiate among information delivery mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>Online analytical processing (OLAP) – need, major functions and feature</li> <li>Dimensional analysis</li> <li>OLAP models (MOLAP, ROLAP, HOLAP)</li> <li>Types of information delivery mechanisms and supporting tools</li> </ul>	T1: 14, 15 T2: 17
31-40	<ul style="list-style-type: none"> <li>To explain advanced dimensional modeling and ETL techniques</li> <li>To elaborate data warehouse performance enhancement methods</li> <li>To explain the trends in data warehousing and BI</li> </ul>	<ul style="list-style-type: none"> <li>Advanced dimensional modeling</li> <li>Real time data warehouses</li> <li>Advanced ETL techniques</li> <li>Data warehousing trends and BI including Web-enabled data warehouses</li> <li>Data warehouse physical design and performance enhancement techniques</li> </ul>	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**



Please Do Not Print Unless

