Module: Data Warehousing 281

Module name:	Data Warehousing 281
Code:	DWH281
NQF level:	7
Type:	Fundamental – Bachelor of Computing (Business Intelligence stream)
Contact Time:	38 hours
Structured time:	6 hours
Self-Directed Time	46 hours
Notional hours:	90 hours
Credits:	9
Prerequisites:	DBD281

Purpose

Data Warehousing 281 is a course in the field of Computer Science involving the creation of integrated databases containing historical data on a consolidated company. Such databases are created for analytical purposes (including the use of the tools of data mining and knowledge discovery), and storage.

Outcomes

Upon successful completion this module, the student will be able to

- Create an integrated data warehouse containing historical data standardized for a company.
- Integrate knowledge from different sources of an enterprise to design a data mart or data warehouse for an organization and appreciate the strengths and limitations of various data warehousing models.
- Formulate knowledge extracting methods and algorithms using data mining techniques and be able to critique their efficiency and application.
- Define and critically analyse data warehouse approaches for fields such as security, forensics, privacy, and marketing.
- Integrate various approaches to data warehousing implementations and be able to produce, present, and defend substantive ideas and information related to such approaches.
- Describe and utilize a range of techniques for designing data warehouses for real-world applications and be able to make informed decisions to select and evaluate, accepted and current Data warehousing technologies.
- Synthesize research-based solutions and methods for data analysis and be able to evaluate their industrial application suitability.

Assessment

Assessment is performed using a variety of instruments:

- Continuous evaluation of theoretical work through assignments, formative and a summative test.
- Continuous evaluation of project work, whereby the student must do Dimensional Analysis Modelling and design, including devising methods for extraction, transformation and loading data into the designed data warehouse.
- Final assessment through a written examination.

Teaching and Learning

Learning materials

Data Warehousing – IT without frontiers series

Additional Material

- 🕮 Ponniah, P. (2010). *Data Warehousing Fundamentals for IT Professionals*. Wiley. [ISBN 978-0470462072]
- 🕮 Kimball, R., Caserta, J. (2004). *The Data Warehouse ETL Toolkit*. Wiley. [ISBN: 0-764-57923-1]

Learning activities

Teaching is a combination between presentation of theoretical concepts and exercises and discussions. It is practically oriented, with mandatory projects which must be completed during the course.

Notional learning hours

Activity	Units	Contact Time	Structured Time	Self-Directed Time
Lecture		27.0		14.0
Formative feedback		7.5		
Project	1	3.5		9.0
Assignment	2			6.0
Test	2		4.0	8.0
Exam	1		2.0	9.0
		38.0	**6.0**	**46.0**

Syllabus

- Data Warehouse (DW) Systems in organization and business
- Characteristics, tasks, architectures, and application domains of DW systems
- Strategic planning and development process of DW systems
- Requirement specification of a DW project work
- Database schema design for DW systems
- Physical database structures and operational performances of DW systems
- Extraction, Transforming and Loading (ETL) process in DW systems
- Aggregated data in DW systems
- Decision Support Systems (DSS), Data Analytics, Business Reporting, and application domains for DW systems
- On-Line Analytical Processing (OLAP) – Concepts, Architectures and SQL capabilities
- Big Data and Data Analytics Thinking