Module Name: Databases and Learning analytics

Aim

This module aims to provide students with advanced knowledge and skills in the area of relational databases, introduced them to the non-relational databases and present the field learning analytics.

Learning Objectives

The course is consisted by two main parts. The first is related to methods and techniques of data management through relational and non-relational databases and the second focuses in the area of learning analytics.   The main learning objectives include the knowledge, applicability, analysis, design and implementation of relational and non-relational databases through theory presentations, hand on experience and analysis of specific case studies. Moreover, this module will cover the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the educational environments. Strategies, frameworks, and data analysis techniques will be introduced to the students.

Learning Outcomes

On successful completion of this module, students should be able to:

- Design, implement and use properly structured databases that match the standards based under realistic constraints and conditions
- Explain the key differences between schema-based and schema-less databases
- Understand the principles behind the NoSQL databases;
- Know the general principles behind key-value, document, column family and graph databases
- Design and implement NoSQL databases using MongoDB
- Will be able to work in a group on the design, and implementation of a database system project
- Understand the principles of learning analytics
- Identify and appropriately use educational data sources (e.g. learning management systems) and associated measures
- Understand and apply analytic processes and computational techniques in order to understand and improve learning and the contexts in which learning occurs

Bibliography

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https://github.com/miollek/Free-Database-Books/blob/master/book/MongoDB%20Basics.pdf

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