

Database Development and Design (CPT210)

Lecture 1: Introduction to the Module

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Acknowledgement

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The Module

- Title: Database Development and Design
- Code: CPT201
- Length: One semester (14 weeks)
- Mode of Delivery: Lectures + Tutorial
- Total hours: 39 hours (Average 3 hours per week)
- Private study (reflection and consideration of lecture material and background reading)
- Credit value: 5

Teaching Activities

- Time and Venue:

- Lectures - 10:00-13:00 Tuesdays on BBB or Zhumu
- Tutorials - 11:00-12:00, Saturdays, SC176
- Office hours - 12:00-13:00, Saturdays, SC176






- Assessment

- Original
 - Two assessment tasks (10% X 2)
 - Final Exam (80%): 2 hours
 - Resit: (100%): 2 hours
- *However, due to the COVID-19, this semester both the final and resit will be 100%!*

What have been covered in CPT103

- Introduction to Database Systems;
- Database Development Lifecycle: Conceptual Design, Logical Design and Physical Design;
- SQL: DDL, DCL, DML;
- Relational Algebra;
- Different DBMS Environments;
- Legal Frameworks;
- Etc...

Aims of the module

- To introduce indexing techniques, query evaluation and optimisation; 
- To introduce the problems arising from concurrency in databases, and how they are solved; 
- To introduce the problems arising from the integration of heterogeneous sources of information and the use of semi-structured data; 
- To introduce non-relational databases; 
- To introduce techniques for data mining. 

Learning Outcomes

- After learning this module, you should be able to:
 - understand indexing, query evaluation and optimisation
 - identify and apply the principles underpinning transaction management within DBMS;
 - demonstrate an understanding of advanced SQL topics;
 - understand the issues related to Web technologies and DBMS, and XML as a semi-structured data representation formalism;
 - identify the principles underlying object relational models;
 - identify the principles underlying distributed databases;
 - identify the principles underlying No-SQL;
 - state the main concepts in data warehousing and data mining.

Course Contents

- Advanced SQL: Indexing;
- Query Evaluation and Optimisation;
- Transaction Management;
- Concurrency;
- Object Relational Databases;
- Distributed Databases;
- Web Technologies (XML) & DBMS;
- NoSQL
- Data Warehousing and Data Mining;
- Etc...

Recommended Textbooks

- **CORE text:** Database System Concept, 6th Ed, A. Silberschatz, H.F. Korth and S. Sudarshen
(**be careful of the errors; errata files uploaded to LM**)
- Database Systems: The Complete Book, Hector Garcia, Jeffrey D. Ullman, Jennifer Widom
- Database Systems: A Practical Approach to Design, Implementation, and Management, T. Connolly and C. Begg
- Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke

End of Lecture

- Summary
 - Introduction to the Module
- Reading
 - Chapter 1, Database System Concepts