UNIVERSITY of NICOSIA

Course Syllabus

Course Code	Course Title	ECTS Credits
COMP-511DL	Database Systems	10
Prerequisites	**Department**	**Semester**
None	Computer Science	Fall
Type of Course	**Field**	**Language of Instruction**
Elective	Computer Science	English
Level of Course	**Lecturer(s)**	**Year of Study**
2nd Cycle	Prof. Philippos Pouyioutas	2nd
Mode of Delivery	**Work Placement**	**Corequisites**
Distance Learning	N/A	None

Course Objectives:

The main objective of the course is to provide a critical study of theory and research related to advanced topic areas of Databases. Topic areas include:

- object-oriented databases and the ODMG model
- object-relational databases
- SQL3, database administration (security, recovery, optimization)
- web databases, web programming and PhP
- XML
- Distributed Databases, NOSQL Systems and Big Data
- Active, temporal, spatial databases, databases, multimedia databases, graphical query languages
- data mining and data warehousing, OLAP

Learning Outcomes:

After completion of the course students are expected to be able to:

1. critically compare and evaluate database models and database systems
2. design and develop web database applications using commercially available database systems
3. enhance and fine-tune database applications with regards to security, authorization and optimization

4. critically assess post-relational database models and especially the object-relational database model, standards and languages
5. develop advanced queries using the SQL language
6. research in state-of-the art areas in databases systems.

Course Content:

1. Post-relational data models and database systems
2. Object DBMSs
   a. Object-Oriented DBMSs—Concepts and Design
   b. Object-Oriented DBMSs—Standards and Languages
   c. Object-Relational DBMSs
3. Web and DBMSs
   a. Web Technology and DBMSs
   b. Semistructured Data and XML
4. Security and Administration, Transaction Management, Query Processing
5. Commercial DBMSs
6. Advanced SQL Programming
7. Active Databases. Deductive Databases. Temporal Databases. Spatial and Multimedia Databases. Mobile Databases. Geographic Information Systems. Digital Libraries. Graphical Query Languages
8. Business Intelligence Technologies
   a. Data Warehousing Concepts
   b. Data Warehousing Design
   c. OLAP
   d. Data Mining.

Learning Activities and Teaching Methods:

Lectures, Lab Presentations, Lab Tutorials, Practical Exercises and Assignments.

Assessment Methods:

Project, Quizzes, Exercises, Final Exam.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Fundamentals of Database Systems 7th Edition	Ramez Elmasri, Shamkant Navathe	Pearson	2015	ISBN 10: 0133970779 ISBN 13: 9780133970777

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Joe Celko's SQL for Smarties, 5th Edition Advanced SQL Programming	Joe Celko	Morgan Kaufman	2015	ISBN-13: 978-0128007617 ISBN-10: 0128007613