COURSE INFORMATON					
Course Title	*Code*	*Semester*	*L+P Hour*	*Credits*	*ECTS*
Advanced Database Systems	**CSE548**	**1**	**3**	**3**	**7**

Prerequisites	CSE548 – ADVANCED DATABASE SYSTEMS

Language of Instruction	English
Course Level	Graduate
Course Type	Compulsory
Course Coordinator	
Instructors	Assist.Prof. Dionysis Goularas
Assistants	
Goals	The aim of this course is to provide students with abilities to enlarge their knowledge on well known database models and get familiar with the newer databases systems like spatiotemporal and cloud databases.
Content	The objective of this course is to provide the necessary concepts required to understand the basic database models and also the new ones created by the increasing use of various types of data as created by the utilisation of Internet by an increasing and considerable number of users. The E-R and Relational Model will be examined and the normal forms will be analyticaly explained. Later on, design issues will be covered followed by a presentation of different types of databases like the spatiotemporal and the cloud databases.

Course Learning Outcomes	**Program Outcomes**	**Teaching Methods**	**Assessment Methods**
1) Knowledge on fundamental and advanced file structures	3	1,2	A,C,D
2) Ability to gather data, analyze and interpret results for investigating engineering solutions in order to design and implement a complete database solution.	4	1,2	A,C,D

Teaching Methods:	1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study
Assessment Methods:	A: Testing, B: Experiment, C: Homework, D: Project

COURSE CONTENT		
Week	**Topics**	**Study Materials**
1	Introduction	Textbook
2	The E-R Model I	Textbook
3	The E-R Model II	Textbook
4	The Relational Model I	Textbook
5	The Relational Model II	Textbook
6	Relational Algebra	Textbook
7	SQL, PL/SQL	Textbook
8	Midterm	Textbook
9	Normal Forms I	Textbook
10	Normal Forms II	Textbook
11	Interface Issues on Databases	Add. Resources
12	Spatiotemporal Databases	Add. Resources
13	GIS Databases: Design issues	Add. Resources
14	Cloud Databases	Add. Resources

RECOMMENDED SOURCES	
Textbook	Ramakrishnan, R., Gehrke, J., Database Management Systems, 3rd Edition, McGraw Hill, 2003
Additional Resources	The Definitive Guide to MongoDB: The NoSQL Database for Cloud and Desktop Computing, Eelco Plugge, Tim Hawkins and Peter Membrey,Apress, 2010 Spatio-Temporal Databases: Flexible Querying and Reasoning, Rita de Caluwe, Guy de Tré and Gloria Bordogna, Springer, 2004 Spatial Databases: With Application to GIS (The Morgan Kaufmann Series in Data Management Systems), Philippe Rigaux, Michel Scholl and Agnès Voisard, 2001

MATERIAL SHARING	
Documents	
Assignments	
Exams	

ASSESSMENT		
IN-TERM STUDIES	**NUMBER**	**PERCENTAGE**
Mid-terms	1	50
Assignment	5	25
Project	1	25
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		40
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		60
Total		**100**

COURSE CATEGORY	Expertise/Field Courses

COURSE'S CONTRIBUTION TO PROGRAM							
No	Program Learning Outcomes	Contribution					
		1	2	3	4	5	
1	Knowledge in the advanced computer architecture field						
2	Knowledge in advanced system design for computer engineering						
3	Knowledge in the theoretical topics of computer science					X	
4	Ability to comprehend, analyse and critique academic publications and conduct scholarly research at the frontiers of computer engineering					X	
5	Ability and knowledge in the fields of Next-Generation and contemporary computer networks						

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 13x Total course hours)	13	3	39
Hours for off-the-classroom study (Pre-study, practice)	15	2	30

Midterm examination	1	2	2
Homework	5	10	50
Project	1	50	50
Final examination	1	3	3
Total Work Load			174
Total Work Load / 25 (h)			6.96
ECTS Credit of the Course			7