

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	School of Engineering		
<b>ACADEMIC UNIT</b>	Department of Financial and Management Engineering		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	FE0116	<b>SEMESTER</b>	6
<b>COURSE TITLE</b>	Databases		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>		3	5
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Prescribed Core Module		
<b>PREREQUISITE COURSES:</b>	-		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>	<a href="http://www.fme.aegean.gr/en/c/databases-tutorial">http://www.fme.aegean.gr/en/c/databases-tutorial</a> <a href="http://www.fme.aegean.gr/en/c/databases">http://www.fme.aegean.gr/en/c/databases</a>		

### (2) LEARNING OUTCOMES

#### Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

- Define program-data independence, data models for database systems, database schema and database instances.
- Recall Relational Algebra concepts, and use it to translate queries to Relational Algebra statements and vice versa.
- Identify Structure Query Language statements used in creation and manipulation of database.

- Define functional dependencies and normalization concepts.
- Identify the methodology of conceptual modeling through Entity Relationship model.
- Identify the methodology of logical model.
- Identify the methodology of physical model.
- Develop an understanding of the differences between OODBMS, ORDBMS and RDBMS and the practical implications of each approach.
- Analyze and design a real database application.
- Develop and evaluate a real database application using a database management system.
- Improve teamwork management skills.
- Enhance negotiation and discussion skills.

#### **General Competences**

*Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?*

*Search for, analysis and synthesis of data and information, with the use of the necessary technology*  
*Adapting to new situations*  
*Decision-making*  
*Working independently*  
*Team work*  
*Working in an international environment*  
*Working in an interdisciplinary environment*  
*Production of new research ideas*

*Project planning and management*  
*Respect for difference and multiculturalism*  
*Respect for the natural environment*  
*Showing social, professional and ethical responsibility and sensitivity to gender issues*  
*Criticism and self-criticism*  
*Production of free, creative and inductive thinking*  
*.....*  
*Others...*  
*.....*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas

### **(3) SYLLABUS**

- Introduction to Databases and Database Environment
- Entity Relationship and Enhanced Entity Relationship Modeling
- The Relational Model
- Relational Algebra
- SQL: Data Manipulation Language
- SQL: Data Definition Language
- Normalization
- Methodology – Conceptual Database Design
- Methodology – Logical Database Design
- Methodology – Physical Database Design
- Object Oriented DBMSs
- Introduction to NoSQL Databases
- Project Assignment

- Review

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	In class teaching, laboratory experience, Open Source RDBMS software	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in communication with students	
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i>  <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39 hours (1.56 ECTS)
	Personal study	83 hours (3.32 ECTS)
	End of semester exam	3 hours (0.12 ECTS)
	Course total	125 hours (5 ECTS)
<b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i>  <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i>  <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	<b>Language of evaluation:</b> Greek.  <b>Method of evaluation:</b> Final Project                      30% Final Exams                        70%	

#### (5) ATTACHED BIBLIOGRAPHY

##### 1) Principal Reference:

D. Dervos Courses in Databases, Volume A, (in Greek)

##### 2) Additional References:

Ramakrishnan Raghu, and Gehrke Johannes, Database Management Systems, Volume A (in Greek)