DATABASE MANAGEMENT SYSTEMS

- **Course code**

  8117
- **Type of course (compulsory, optional)**

  Compulsory
- **Level of course**

  N/A
- **Year of study**

  2013-2014
- **Semester**

  3rd Semester
- **Number of credits allocated**

  6 ECTS Credits
- **Name of lecturer**

  Chatziantoniou Damianos, Assistant Professor
- **Learning outcomes**

  Databases began as a simple application in early 70s and grew to one of the most important fields in computer industry, touching hundreds of IT applications. This outcome was somehow expected, since the focus of database research is the description, storage and usage of data. To describe a database application we need a data model, such as the entity-relationship or the relational model. To retrieve and make use of the stored data, we need a generic query language, such as SQL. Finally, there are numerous ways to store data, depending on how this will be used. The goal of this course is to educate students on how to design properly, build efficiently and use intelligently a database. Furthermore, it should make apparent the various trade-offs that exist in designing, building and using such an application.
- **Mode of delivery (face-to-face, distance learning)**

  Face-to-face
- **Prerequisites and co-requisites**

  N/A
- **Recommended optional programme components**

Laboratory training using a commercial database product (Microsoft SQL Server).

- **Course contents**

  - Introduction: Purpose, data models, database languages, users, transactions, architecture.
  - Entity-Relationship Model: Entities, relationships, attributes, keys, mapping cardinalities, weak entities, E-R diagrams, mapping to tables, examples.
  - Relational Model: Relations, relational schema, relational algebra.
  - The SQL Language: Basic structure, nested subqueries, aggregation, views, update, procedural and embedded SQL, triggers.
  - Relational Design: Integrity constraints, functional dependencies, decomposition, normalization.
  - Storing and Indexing: File organization, indexing, hashing, trees.
  - Special Topics: Data warehousing, OLAP, data mining, data streams, OO DBs.

- **Recommended or required reading**

  📖 «Database Management Systems», Vol. I and II, R. Ramakrishnan & J. Gehrke, 2nd edition, McGraw-Hill, 2002.

  📖 «Database System Concepts", Silberschatz, Korth, Sudarshan, 5th edition, McGraw-Hill, 2004.

- **Planned learning activities and teaching methods**

  Traditional presentations and lectures, invited speakers from the industry, labs to present a specific commercial database system.

- **Assessment methods assessment methods and criteria**

  Written exam (60%), development of a large database application (40%).

- **Language of instruction**

  Greek

- **Work placement(s)**

  N/A. Organizations of the private and public sector that use databases. That includes telecommunication companies, manufacturing, financial and insurance institutions, marketing analysis firms, etc.