

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED SCIENCES		
DEPARTMENT	DIGITAL MEDIA AND COMMUNICATION		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	DMC 561	SEMESTER OF STUDY	5th
COURSE TITLE	DATA TECHNOLOGIES		
COURSEWORK BREAKDOWN		TEACHING WEEKLY HOURS	ECTS Credits
		Lectures	2
		Lab exercises	2
		<i>Total</i>	4
COURSE UNIT TYPE	Elective, General Course Infrastructure		
PREREQUISITES :	-		
LANGUAGE OF INSTRUCTION/EXAMS:	GREEK		
COURSE DELIVERED TO ERASMUS STUDENTS	Yes (in English)		
MODULE WEB PAGE (URL)	TBA		

2. LEARNING OUTCOMES

Learning Outcomes

The purpose of this course is to introduce the students to the technologies of organization, management and retrieval of data (e.g. databases), to semantic technologies and to the available tools and techniques for data analysis and web mining. In the laboratory part of the course, students will gain practical knowledge on database management and data retrieval using the structured query language SQL.

Upon successful completion of the course the student must be able to:

- Demonstrate knowledge on data management and representation technologies.
- To compare and evaluate data technologies according to various fields of application.
- To select the right technologies in order to organize and manage data for communication purposes
- To critically understand the usage of available web mining tools and social media mining tools.

General Skills

- Teamwork
- Critical thinking
- Working in interdisciplinary field
- Free, creative and inductive thought
- Search, Analysis and Synthesis of data and information with the use of necessary technologies.

3. COURSE CONTENTS

- Introduction to data representation technologies. Markup languages (xml, html)

- Metadata and its use in documentation and cataloging.
- Semantic Technologies
- Introduction to database theory
- Principles of database design
- Data retrieval and data management. The structured query language SQL.
- Introduction to Data analysis, data warehouses and data mining concepts and main techniques.
- Classification, clustering and association
- Web Mining, Web Content Mining, Web Usage Mining, Web Link Mining
- Opinion and Social Media Mining

4. TEACHING METHODS - ASSESSMENT

MODE OF DELIVERY	In-Class	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Students work with Database Management Applications and tools for web mining. Support of the learning process through multimedia video-lessons. Support of the learning process through the e-class platform.	
TEACHING METHODS	<i>Method description</i>	<i>Semester Workload</i>
	Lectures	26
	Lab exercises	26
	Personal Study	48
	Total	100
ASSESSMENT METHODS	I. End of Semester Formal Examination (60%) - Short answer questions - Essay questions - Questions of solving communication problems. II. Presentation of Group Projects (40%)	

5. RESOURCES

- *Recommended Book Resources:*

- Papathanasiou E., Kardaras D. (2011) Files and Databases for Business Administrators, Benou Publications
- Michael Alexander (2011), Access Guide for Data Analysis: From Excel to Access, A. Giourda Publications
- Staurakoudis A. (2010) Data Bases and SQL: A Practical Approach. Kleidarithmos Publications
- Ramakrishnan Raghu, Gehrke Joahannes (2012), Data Base Management Systems, Tziola Pub.
- Vazirgianis M. Chakidi M. (2005), Mining Knowledge from Databases and from the Web, Dardanos G.-Dardanos K. Pub.

- Nanopoulos A., Manolopoulos G. (2008) Introduction to Data mining and to Warehouses, New Technology Pub.
- Garcia-Molina, Ullman, Widom (2010) Database Management Systems, University of Crete Publications.
- M. Russell (2011). Mining the Social Web. O'Reilly, 2011.

-Recommended Papers and Articles:

- G. Lappas (2012). "Social Multimedia Mining: Trends and Opportunities in Areas of Social and Communication Studies", in I-Hsien Ting, Tzung-Pei Hong and Leon S. L. Wang (eds.) *Social Network Mining, Analysis and Research Trends: Techniques and Applications*, Information Science Reference, pp 1-16
 - G. Lappas (2011). "From Web Mining to Social Multimedia Mining", in *Proceedings of the 2011 International Conference on Advances in Social Network Analysis and Mining (ASONAM 2011)*, 25-27 July, Kaohsiung, Taiwan.
 - G. Lappas (2008). "An Overview of Web Mining in Societal Benefit Areas", *Journal of Online Information Review*, 32(2):179-195.
 - D. Bradbury (2011) Data Mining with LinkedIn, *Computer Fraud & Security*, pp. 5-8
 - Lei Tang and Huan Liu (2010), Community Detection and Mining in Social Media, *Synthesis Lectures on Data Mining and Knowledge Discovery*, Vol. 2, No. 1 , Pages 1-137
 - Pang Bo, Lee Lillian (2008). Opinion Mining and Sentiment Analysis. *Found. Trends Inf. Retr.*2, 1-2 pp, 1-135
- Diana Maynard, Kalina Bontcheva, Dominic Rout (2012), Challenges in developing opinion mining tools for social media, *In Proceedings of NLP can u tag usergeneratedcontent? Workshop at LREC 2012* pp. 15-22.