Course title: Business Intelligence

Instructor: Efstathios Kirkos   **Contact details: stkirk@ihu.gr**

Semester: Winter

ECTS: 6

Workload during semester: 150 hours

Course overview

Business Intelligence Systems, DSS, mathematical modeling, data warehouses, basic concepts of data mining, the development of BI systems

Course outline per week

1st week: Introduction to Business Intelligence, definitions, reasons and enablers for BI, advantages and disadvantages of BI

2nd week: Structural Levels of BI, the BI Lifecycle, applications of BI in accounting, sales, marketing, supply chain, HRM, vendors of BI Systems

3rd week: Decision making, decision categories, the Simon's model of decision making, management and decision making

4th week: Information systems and managerial decisions, MIS, DSS, DSS structure, data driven DSS, Executive Support Systems, Group Decision Support Systems

5th week: Models for Decision Making, uses of models, categories of models, Structure of mathematical models, solution search methodologies, Linear Programming, simulation, what-if and sensitivity analysis

6th week: Data warehouses, definition, the necessity of DW, data quality, integration, granularity, data warehouse schemas (star, constellation, snowflake), cubes and cuboids

7th week: Concept hierarchies, OLAP, Data marts, Data warehouse development methodologies, ETL, metadata,

8th week: Introduction to Data Mining, definitions, the knowledge discovery process, data mining and business intelligence, data mining tasks, supervised and unsupervised learning,

9th week: Introduction to Classification, stages of classification, training and validation, evaluation criteria of classification methods, introduction to Decision Trees and Neural Networks, business applications

10th week: Regression, Linear, Multiple Logistic business applications

11th week: Clustering, similarity measures, distance with arithmetic, binary and nominal attributes, partitioning, hierarchical, density-based, grid-based and model-based methods

12th week: Clustering, k-means, agglomerative and partition hierarchical clustering, self organizing maps, applications of clustering in business.

13th week: Developing Business Intelligence Systems. Success factors of BI systems

Capabilities developed in the course

Capability 1: Search, analysis and synthesis of data and information, using the necessary technologies
Capability 2: Decision-making
Capability 3: Solution Seeking
Capability 4: Autonomous and team work
Capability 5: Working in an interdisciplinary environment
Capability 6: Promoting free, creative and deductive thinking

Learning outcomes

The student:

▪ Understands basic business intelligence concepts and techniques

▪ Understands decision-making issues using mathematical models

▪ Understands the characteristics and properties of Decision Support Systems

▪ Understands data warehouse issues and can perform OLAP tasks

▪ Knows concepts and methods of categorization, and cluster analysis as well as their advantages and limitations

▪ Designs and implements the development and implementation of Business Intelligence system in the modern enterprise

Assessment methods

Assignments: 40%

Exams: 60%

NOTE: A student's assessed work may be reviewed for potential plagiarism or other forms of academic misconduct.

Delivery mode

Lectures

NOTE: The recording of any class on a personal device requires the permission of the instructor

Learning resources

Course material, ppt presentations, etc /Digital platforms: Eclass (eclass.gunet.gr) / Moodle

Reading list

1 Lecture notes

2 Han, Kamber and Pei, Data Mining concepts and techniques, Morgan Kaufman