



University of Nicosia, Cyprus

Course Code COMP-303	Course Title Data Mining	ECTS Credits 6
Department Computer Science	Semester Fall	Prerequisites MATH-225 , COMP-302
Type of Course Elective	Field Computer Science	Language of Instruction English
Level of Course 1 st Cycle	Year of Study 3 rd	Lecturer Dr Florent Domenach
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Provide understanding of what is Data Mining
- Determine when and how we can use Data Mining tools
- Introduce the concepts and techniques of pre-processing of the data to be analyzed,
- Introduce the concepts and techniques of statistical methods, Decision Trees, Clustering Methods and Association Rules from data

Learning Outcomes:

After completion of the course students are expected to be able to:

1. analyze problems and find abstract solutions
2. use the basic data mining concepts and problem solving techniques
3. prepare data to be analyzed
4. apply statistical methods to analyze data
5. use Decision Trees to analyze data
6. use Clustering Methods to analyze data
7. extract Association Rules from data

Course Contents:

1. Introduction to Data Mining
 - What is Data Mining?
 - What tasks can Data Mining accomplish?
2. Data preprocessing
 - Data cleaning
 - Handling missing Data
 - Data transformation
3. Statistical approaches
 - Univariate Methods
 - Statistical Inference
 - Bivariate Methods
4. Decision trees
 - Classification and Regression Trees
 - C4.5

- Decision Rules
- 5. Clustering methods
 - Hierarchical Clustering Methods
 - K-Mean clustering
- 6. Association rules
 - Support, Confidence, Frequent Itemsets
 - A priori algorithm

Learning Activities and Teaching Methods:

Lectures, Practical Exercises and Assignments.

Assessment Methods:

Homework, Project, Mid-Term, Final Exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
D. T. Larose	Discovering Knowledge in Data, an introduction to Data Mining	Wiley	2005	0-471-66657-2

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
J. Han & M. Kamber	Data Mining, Concepts and Techniques, 2 nd Ed.	Morgan Kaufmann	2006	1-55860-901-6