Department: Mathematics and Computer Sciences
Division: Computer Sciences
Level and Major: Undergraduate

Course Title: Introduction to Data Mining
Number of Credits: 3
Prerequisite: -
Lecturer:

Course Description: Review and Analyze Data and introduce different methods for Clustering them:

- Preprocessing Data (Filters, Missing Values)
- Data Mining
- Decision Trees
- Classification / Regression Algorithms (J48/C5.0, M5P)
- Presentation Skills to non-technical Audience
- Normalization, Distance, Correlation
- Machine Learning
- Compare Items (k-NN/IBk)
- Predictive Revenue Model (k-NN, M5P…)
- Class Prediction Model (J48, k-NN)

Course Topics:

- Chapter 1. Introduction
- Chapter 2. Know Your Data
- Chapter 3. Data Preprocessing
- Chapter 4. Data Warehousing and On-Line Analytical Processing
- Chapter 5. Data Cube Technology
- Chapter 6. Mining Frequent Patterns, Associations and Correlations: Basic Concepts and Methods
- Chapter 7. Advanced Frequent Pattern Mining
- Chapter 8. Classification: Basic Concepts
- Chapter 9. Classification: Advanced Methods
- Chapter 10. Cluster Analysis: Basic Concepts and Methods
- Chapter 11. Cluster Analysis: Advanced Methods
- Chapter 12. Outlier Detection
- Chapter 13. Trends and Research Frontiers in Data Mining
- Working with Rapid Miner or Clementine

Reading Resources:

- Tan, P. N., Steinbach, M., & Kumar, V. (2016). Introduction to data mining. Pearson Education India.
- Zaki, M. J., & Meira, W. (2014). Data mining and analysis: fundamental concepts and algorithms. Cambridge University Press.
- Aggarwal, C. C. (2015). Data mining: the textbook. Springer.

- Han, J., Pei, J., & Kamber, M. (2011). Data mining: concepts and techniques. Elsevier.

Evaluation: