

Faculty of Mathematics and Information Science
2016/2017

Course title

Data Mining

Internal code no

Program

BSc/MSc

Course type lectures, lab

Number of credit points

4

Placement (recommended) 7th semester

Placement in timetable

7 semester

Length 1 semester

Hours per week

2/0/1/0

Status of the Course in the study program

Elective

Objective

The course introduces principles and techniques of data mining. It emphasizes the advantages and disadvantages of using these methods in real world systems, and provides hands-on experience.

Courses description

1. Introduction. Verification model, and discovery model. Data warehousing. Potential applications.
2. Classification algorithms. Decision tree based classification. Naive and Bayesian networks. Feature selection techniques. Neural network based classification.
3. Clustering. Graph based methods, k-means and k-medoids methods. Hierarchical clustering. Partitional clustering.
4. Association rule discovery. Apriori principle and its extensions. Sequential associations.
5. Deviation detection techniques.

Required prerequisites

Computer Statistics

Assessment method

Lab: project (max 40 pts) – max 20pts for documentation and max 20pts for computer implementation, preparation of data sets and tests, presentation.
Lecture: multiple choice test (max 60pts) – 20 questions, +3 pts for each correct mark, -3 pts for each wrong mark.
Both parts (project and test) have to be passed. (at least 21 pts for the lab and at least 31 pts for the test)
Final grade: 51-60 pts = 3.0, 61-70 pts = 3.5, 71-80 pts = 4.0, 81-90 pts = 4.5, 91-100 pts = 5.0.

Reference books

1. M. Berry, G. Linoff, *Mastering Data Mining*, John Wiley & Sons, 2000.
2. U. Fayyad, G. Piatetsky-Shapiro, P. Smyth, R. Uthurusamy, *Advances in Knowledge Discovery and Data Mining*, AAAI/MIT Press, 1996.
3. J. Han, M. Kamber, *Data Mining: Concepts and Techniques*, Morgan Kaufmann, 1996.
4. N. Indurkha, S.M. Weiss, *Predictive Data Mining: A Practical Guide*, Morgan Kaufmann, 1997.

Responsible person

Krzysztof Bryś